WESTERN EDITION
MAY • 1955

American Fruit Grower

The Bird Problem • New Ways to Train Delicious

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Announcing new Dodge "Job-Rated" Trucks!

The **power line** with **full view** design!

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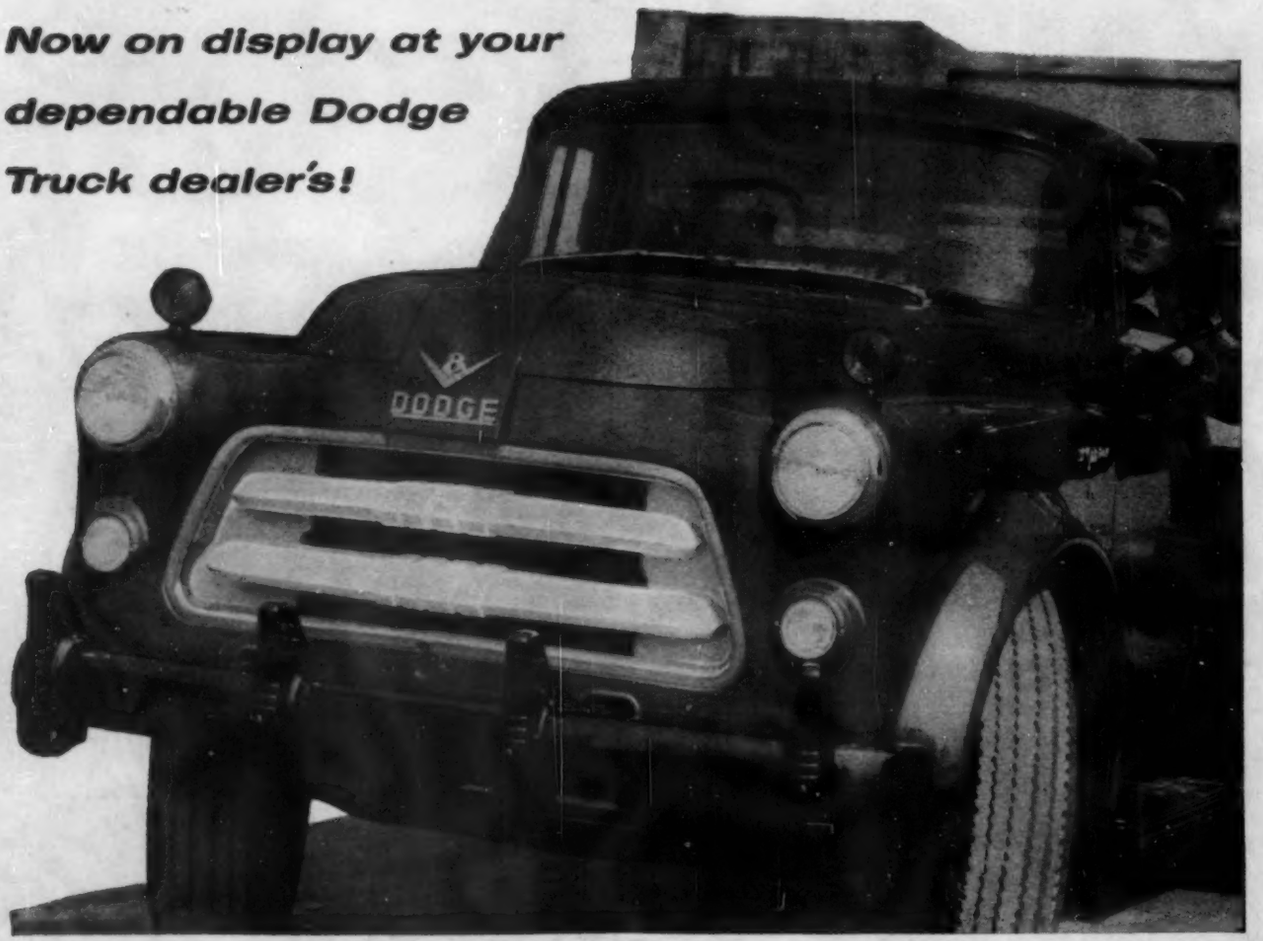
NEW! Full-view design with biggest wrap-around windshield of any make! Wrap-around rear window available, too! You get greater safety, easier handling!

NEW! Higher payloads, new no-clutch transmissions, power steering and braking, fuel-saving overdrive! Plus smartly-styled interiors, colors, 2-toning! Over 100 new features!

Now on display at your dependable Dodge Truck dealer's!



Entered as second-class matter at Post Office at Willoughby, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Illinois

Antibiotics Now Offer Superior Blight Control

STREPTOMYCIN IS THE UNSURPASSED ANTIBIOTIC

AGRI-STREP,* the new, high potency, bacterial blight control spray, contains streptomycin. Extensive field tests have proved streptomycin to be the most potent, most stable, and most effective antibiotic for controlling certain bacterial plant diseases. That's why more than a dozen state experiment stations in all major producing areas are recommending its use this year.

In many tests, orchards sprayed with AGRI-STREP needed less than one blight cut for any two to three trees, while unsprayed trees required ten or more cuts a tree.

This is *big* money-making news for orchardists who grow apples, pears, or walnuts. For *now* you can boost market quality and prevent yield losses from fire blight in apples and pears—and blight in walnuts—by putting AGRI-STREP in your orchard blight control program.

Try AGRI-STREP for excellent control of these other plant diseases:

- **TOMATOES**—Bacterial Spot
- **PEPPERS**—Bacterial Spot
- **POTATOES**—Soft Rot and Black Leg
- **TOBACCO**—Wild Fire and Blue Mold

For details, consult your county extension agent or state experiment station.

Merck agricultural streptomycin is easy to use and readily available. It is sold as AGRI-STREP by Niagara Chemical Division, Food Machinery and Chemical Corp., Middleport, N. Y.; and as ORTHO STREPTOMYCIN by California Spray-Chemical Corp., Richmond, Calif. Contact their local representative or dealer.

*TRADE-MARK, MERCK & CO., INC.

Research and Production for Improving the Nation's Agriculture

MERCK & CO., INC.
Manufacturing Chemists
RAHWAY, NEW JERSEY

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"TOPS FOR MY MONEY!"

That's the opinion of a man who's been in the fruit business for many years. He's Melvin Farber, Supervisor of Holtzinger Fruit Co. Ranches, Yakima, Washington, and he's talking about CAT* Diesel Tractors:

"In the years I've been supervising the various operations of our 400 acres of fruit, the two D2 Tractors have played a very important role. Their low cost of fuel and repairs, their dependability and faithful service have aided in our low costs of operation. They've pulled us through every kind of weather!"

What would mud at spray time right now mean to you? Could a delay cost you a part of your crop?

How'd you like to cut your annual fuel costs as much as 50% to 70%?

How much more would your orchard or farm be worth if the dead trees were pushed out, the fence rows cleared, land leveled, irrigation and drainage ditches built?

Your Caterpillar Dealer will help you find the answers to these questions. He's ready to demonstrate the tractor you need in your orchard, where you can prove to yourself that an investment in a Cat Diesel Orchard Tractor can be your most profitable move! Call him today! Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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Free Orchard Booklet: Write today for a free copy of "Caterpillar Orchard and Vineyard Tractors." Address: Dept. AMF55, Caterpillar Tractor Co., Peoria, Ill.

Diesel Orchard Tractors And Tool Bars

American Fruit Grower

REG. U.S. PAT. OFF.

The Only National Fruit Publication

Vol. 75 MAY, 1955 No. 5

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AMERICAN FRUIT GROWER

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Postmaster: Please send change of address "Form 3579" to AMERICAN FRUIT GROWER, Willoughby, Ohio.

Look what MALATHION does for YOU

ON THESE CROPS — MALATHION CONTROLS THESE PESTS — WITH THIS DOSAGE

		Emulsifiable Liquid Per 100 gals.	Wettable Powder 25% Per 100 gals.	Dust Per Acre	Number of Applications	Days Before Harvest for Last Application
FRUITS and NUTS	**Thorough, full-coverage applications should be made.**					
Apples	Woolly apple aphid Bud moth	1 pt.	2 lbs.	–	1+	10
	Green apple aphid Rosy apple aphid	1½ pts.	2 lbs. 2½ lbs.	–	1+	10
	Mealybug	1-2 pts.	2½ lbs.	–	1+	10
	Mites such as: European red mite Clover mite *Willamette mite *Two-spotted mite	1-2 pts.	2-2½ lbs.	–	2+	10
	*Make at least two applications 10-12 days apart in summer months.					
	Codling moth Plum curculio Red-banded leaf roller	2 pts.	3 lbs.	–	1+	10
	Forbes scale	1 pt.	2½ lbs.	–	2-3	10
	These pests are also controlled by combining 1½ pts. Emulsifiable Liquid or 2 lbs. Wettable Powder and 2½ lbs. 50% Methoxychlor WP or 2 lbs. 50% DDT, WP.					With DDT 30 Methoxychlor 10
	Malathion Emulsifiable Liquid may cause injury to McIntosh and Cortland varieties in summer sprays.					
Pears	Mites	1-2 pts.	2-2½ lbs.	–	2+	10
	Pear psylla	1-2 pts.	2-2½ lbs.	–	1+	10
	Mealybug	1-2 pts.	2½ lbs.	–	1+	10
	Codling moth Plum curculio Fruit tree leaf roller Red-banded leaf roller	2 pts.	3 lbs.	–	1+	10
	The same combination treatment suggested for apples can be used for pears.					With DDT 30 Methoxychlor 10
	Injury may occur to Bosc pears under certain conditions in the Northeast using malathion sprays.					
Peaches	Mites such as: European red mite Two-spotted mite	–	2-2½ lbs.	–	2+	14
	Oriental fruit moth Plum curculio	2 pts.	3 lbs.	–	2+	14
	The same combination treatment suggested for apples can be used for peaches.					With DDT 30 Methoxychlor 14
Cherries	Black cherry aphid	–	2 lbs.	–	1+	10
	Black cherry aphid and Fruit tree leaf roller	1½ pts.	–	–	1+	10
	Injury may occur on certain varieties of sweet cherries particularly in the Northwest.					
Grapes	Leafhopper, California and Southwest	1½ pts.	–	20-40 lbs. 4% + sulfur	1+	14
	Spider mites	1½ pts.	–	20-40 lbs. 4% + sulfur	2+	14
	Mealybugs	1½ pts. (50-100 gals.)	–	–	1+	14
	Injury may occur on Ribier grapes with Emulsifiable Liquid.					
Plums & Prunes	Mealy plum aphid	1 pt.	1 lb.	–	1+	10
	Plum curculio and Mealy plum aphid	See combination below		–	–	–
	These pests can be controlled by combining 1-1½ pts. Emulsifiable Liquid or 2 lbs. Wettable Powder and 2½ lbs. 50% Methoxychlor WP or 2 lbs. 50% DDT, WP.					With DDT 30 Methoxychlor 10
Strawberries	Aphids Spider mites	1½ pts.	2½ lbs.	40 lbs.	1+	10

Malathion has also been accepted for use on cranberries, dates, pineapples, pecans and walnuts

MALATHION gives you these 4 big advantages:

1. High toxicity to insects
2. Low toxicity to man and animal
3. Quickly disappearing residues
4. Compatibility with most commonly used insecticides and fungicides

This spray and dust chart is part of the new MALATHION Growers Guide. Write for your free copy today.

Malathion insecticides are available from well-known manufacturers under their own labels.

See your dealer—Order today.

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P.S. Malathion kills flies, too!

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METHOD...

POWERED BY
YOUR TRACTOR
OR MOST AUTOMOTIVE
OR INDUSTRIAL ENGINES

PROTECTS
10 TO 15 ACRES
PER MACHINE

SHIPPED
KNOCKED DOWN
READY FOR EASY ERECTION

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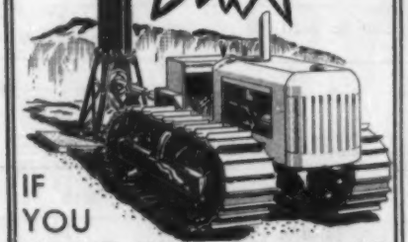

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LETTERS TO THE EDITOR

Mitchell Strawberry

Dear Editor:

I would like to know if any of your readers has or knows of anyone having plants of the old-time Mitchell strawberry. I would be glad to pay a good price for a few plants, or I would exchange for some plants of my new strawberry, which is the result of a cross between Red Rich and 20th Century. The new strawberry is a thrifty grower and bears 2 good crops a season. It is a late bloomer and a prolific plant maker. I call it the Ozark Beauty, since it is tops here. Plants of the Ozark Beauty will be available in the spring of 1956.

Westford, Ark. J. B. Winn

Reader for 50 Years

Dear Editor:

I am 83 years old. I have read AMERICAN FRUIT GROWER nearly 50 years.

Was AMERICAN FRUIT GROWER published in St. Joseph?

St. Joseph, Mo. J. C. Zimmerman

You are right, AMERICAN FRUIT GROWER *was published in St. Joseph, Mo., first under the name, "Western Fruit Grower," and later under the name, "The Fruit Grower." "The Fruit Grower" of St. Joseph was merged with "Green's Fruit Grower" of Rochester, N.Y., and the "American Fruit Grower" of Charlottesville, Va., around 1915. This year,* AMERICAN FRUIT GROWER *celebrates its 75th anniversary and we will publish a special large anniversary issue next October.*

Spraying "Invention"

Dear Editor:

Enclosed is a snapshot of an "invention" designed by my husband and his brothers who operate apple orchards in Andrew County, Missouri.

Last year they designed and built this cab to go on an M Farmall with which they pull a Bean Speed sprayer. It is equipped with windshield wipers and washers on front, sides, and back. It has vents above the windshield, and the side glasses slide open past each other. There is a defroster fan to help cool the driver, and also a trouble light inside since a good deal of the spraying is done at night because of strong daytime wind.

My husband is searching for a satisfactory air-conditioning unit to install, and then he thinks he will have his spraying comfort provided for!

Savannah, Mo. Mrs. Calvin Schweizer

Dug Wells

Dear Editor:

In the "Question Box" column of the January, 1955, issue of AMERICAN FRUIT GROWER a man asks about the construction of dug wells.

My simple formula for the construction of a dug well is as follows:

Buy 3-, 4-, 5-, or 6-foot concrete piping. Dig the hole in the fall, 8 feet deep for a 60-inch well. Drop the piping down as you go along and work inside to be safe from cave-in. When done, fill *fine,* smooth, *clean* gravel around the piping, to serve as a filter. As 6-foot reinforced pipes are 6 feet long and weigh 7,800 pounds per joint you will need a small crane. A 60-inch inside well holds 1,270 gallons per 6 feet, 6,345 gallons in 30 feet. Water is softer than deep drilled well water, and you draw the water from your own land. Thus the deep wells of your neighbors cannot affect it.

Beaverton, Oreg. M. F. Gohre

Basket Brace

Dear Editor:

I noted with interest the description of a basket brace in your March issue.

In 1948 the problem of picking tree-ripe peaches led me to cut pieces from surplus aluminum U stock and fit them on the baskets. The purpose was to keep the basket spread, but the pickers immediately found they also gave a more comfortable hold on the basket.

Since that time I have made a number every year to replace lost ones or to improve the facility of use. They are a "must" for all handling of baskets. Their constant use in handling peaches at the Baker Fruit Farm has made them widely known in this area—just north of Wooster, Ohio.

I think the design is now good enough to make them available this fall.

West Salem, Ohio. H. P. Bradley

Storm-Damaged Trees

Dear Editor:

Considering my experience a few years back, I cannot agree with the article on storm-damaged trees in the December, 1954, issue.

If a tree is left lying down, it will be harder to work around and mice will have a better opportunity to damage it. On the other hand, if it is held up with wire supports the stakes would have to be a considerable distance from the tree. This would seriously interfere with mowing, cultivating, or spraying practice, to say nothing of the danger of tripping over them.

I had some difficulties a few years back with the same problem. I solved it by digging a post hole close to the tree trunk on the side opposite to the side on which the tree had fallen. Using a small auger, I put in small fence posts (more accurately, the top section of cedar tree which was left after a fence post was cut from the lower section). I planted these posts firmly by soaking the dirt down around them and letting them stand a few days before bringing the tree up and tying it to the post. The posts were planted as deep as possible.

I did not drive any nails into the tree but used old canvas belting, putting it around the tree and post and nailing it to the post only. I also added about 3 or 4 inches of extra dirt over the roots of these trees, packing it firmly.

Since that time several years ago, these trees have done well, been no bother, and appear to be thriving. I intend to just let the post rot off.

This method was 100 per cent satisfactory for me, and these trees look normal.

London, Ont., Canada Frank Smitt

Stop mites

...from robbing your profit with...

Chlorobenzilate*

Extensive laboratory and field testing throughout the United States, Europe and Canada has proven Chlorobenzilate (formerly Geigy 338) to be "the" miticide for controlling mites which attack fruit. We are confident that the facts speak for themselves when we point out that Chlorobenzilate.....

- **controls many species of mites attacking apples, pears and citrus.**
- **has long residual action and ovicidal properties.**
- **is relatively non-toxic to man and animals.**
- **does not affect bees under normal field conditions.**
- **controls phosphate resistant mites.**
- **is compatible with most commonly used insecticides and fungicides.**
- **is economical.**

When you are thinking in terms of increased yields of quality fruit think of **GEIGY CHLOROBENZILATE.**

Geigy's complete line of agricultural chemicals for the fruit grower include:

DDT • METHOXYCHLOR • BHC
MALATHION • PARATHION
SEQUESTRENE products for correction of iron chlorosis (yellowing) in orchard trees and nursery stock.**

*CHLOROBENZILATE is the brand name for acaracides and miticides sold by Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation.

**SEQUESTRENE is the brand name for chelating compounds sold by Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation.

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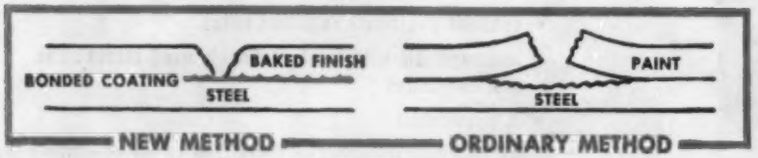
LELAND, MISS. • McGREGOR, TEX. • ORLANDO, FLA. • WALLA WALLA, WASH. • YAKIMA, WASH.

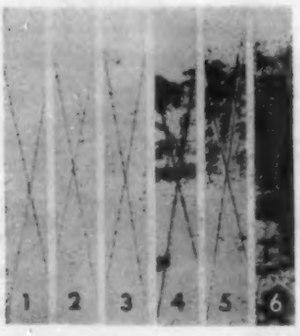
New Coating Protects Myers Sprayer Tanks

DEFIES SPRAY MIXTURES THAT SOFTEN ORDINARY PAINT IN MINUTES

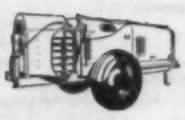
This amazing new tank-saver coating provides positive protection against the corrosive action of strong spray solutions that can ruin high-quality, uncoated steel tanks in a few months. It is a permanent baked-on finish which is applied over a special coating actually bonded to the steel. If the finish is damaged by scratches or impact, the chemical bond confines corrosive action (see drawing). Ordinary methods of painting permit liquids to "creep" under the paint and attack the metal.

TESTS PROVE LONGER TANK LIFE

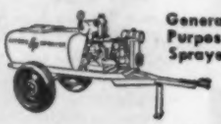




The new finish assures longer tank life by eliminating paint peeling and flaking that clog spray nozzles, pumps and strainers. Test panels prove it. Panels 1, 2 and 3 received the new bonded coating; panels 4, 5 and 6 received ordinary treatment. All panels were scratched and immersed in a strong solvent present in many spray mixtures. Result: after several weeks, panels 1, 2 and 3 lost no paint; others were stripped nearly bare.



Concentrate Field Crop Sprayer



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Song of an Orchardist

AH SPRING!

By Albert L. Mason
Albion, N.Y.

Sweet spring is here, bold buccaneer
With balmy breeze or freezing;
I shed some clothes; I blow my nose;
My asthma has me wheezing!

The birds and bees and budding trees
Inspired this rustic sonnet;
One gets the urge to make a splurge
And buy his wife a bonnet.

These signs of spring so often bring
A longing quite nostalgic
To us poor guys with rheumy eyes
And numerous aches neuralgic.

So disciplined by wintry wind,
Our souls rebel at rigor;
Perhaps, forsooth, we dream of youth
And days of verve and vigor.

That man is old who must be told
When maple sap is flowing;
There still is hope in your horoscope,
If spring wakes you up crowing!

CALENDAR OF COMING MEETINGS & EXHIBITS

June 8—Illinois State Horticultural Society summer Orchard day, Frank and Bob Chatten Farms, Quincy.—Harold J. Hartley, Sec'y, Carbondale.

June 8-9—Florida Citrus and Sub-Tropical Fruits Institute, Camp Francis, Lake Placid, Fla. Conducted by Florida Agricultural Extension Service, Gainesville.

June 16—Small Fruits Day, Ohio Agricultural Experiment Station, Wooster.—C. W. Ellenwood, Sec'y, OSHS, Wooster.

June 16-20—National Apple Institute annual convention, Mark Hopkins Hotel, San Francisco, Calif.—Truman Nold, Sec'y, 726 Jackson Pl., Washington 6, D. C.

Aug. 1-3—United Fresh Fruit and Vegetable Association 7th annual merchandising conference, Conrad Hilton Hotel, Chicago. Association headquarters—777 14th St., N. W., Washington 5, D. C.

Aug. 9-11—Ohio Pesticide Institute summer meeting and field tour, Wooster and various points in northern Ohio.—J. D. Wilson, Sec'y, Ohio Experiment Station, Wooster.

Aug. 15-18—International Apple Association annual meeting, Statler Hotel, Detroit, Mich. Fred W. Burrows, Exec. V. P., 1302 18th St., N.W., Washington 6, D. C.

Aug. 15-19—Florida Citrus Institute, Camp McQuarrie.

Aug. 16-20—Centennial of Farm Mechanization, Michigan State College, East Lansing.—A. W. Farrall, Head, Agr. Engr. Dept., MSC, East Lansing.

Aug. 18—Orchard Day, Ohio Experiment Station, Wooster.—C. W. Ellenwood, Sec'y, OSHS, Wooster.

Aug. 29-Sept. 6—International Horticultural Congress 14th annual meeting, Scheveningen, Netherlands.—Dr. G. de Bakker, Sec'y, Bezuidenhout 30, The Hague, Netherlands.

Sept. 19-21—Texas Citrus and Vegetable Growers and Shippers, Inc., annual convention, Shamrock Hotel, Houston.—Austin E. Anson, Exec. Mgr., 306 E. Jackson, Harlingen.

Oct. 4-6—Florida Fruit and Vegetable Association annual convention, Hotel Fontainbleau, Miami Beach, Fla.—Association headquarters: 4401 E. Colonial Drive, Orlando.

Oct. 9-11—Produce Packaging Association annual convention and exposition, Conrad Hilton Hotel, Chicago.—Association headquarters: 500 5th Ave., New York 36, N. Y.

Nov. 1-3—Florida State Horticultural Society annual meeting, Clearwater.—Ernest L. Spencer, Sec'y, Bradenton.

Nov. 16-18—Western Growers Association annual convention, Westward Ho Hotel, Phoenix, Ariz.—Headquarters: 606 S. Hill St., Los Angeles 14, Calif.

Jan. 23-26, 1956—United Fresh Fruit and Vegetable Association annual convention, Hotel Roosevelt, New Orleans, La.—Association headquarters: 777 14th St., N. W., Washington, D. C.

The cover spray that's "tops" for total clean fruit

You can simplify your vital summer spray program by using effective, economical Black Leaf 253 to replace complicated, expensive insect-control materials. With Black Leaf 253 you stop the bugs, you save on labor and materials, and you get the ideal insect control that turns out more clean, high-quality fruit.

Black Leaf 253 kills codling moth, green and rosy aphids, red-banded leaf roller, leafhoppers, European red mite, two-spotted mite, pear psylla, San Jose scale and many other pests. Leading growers in major areas find that Black Leaf 253 tops other spray programs consistently in total clean fruit at harvest.

Dustless Black Leaf 253 is *Tobacco Base* impregnated with 25% of DDT and 3% of Parathion by an exclusive process. It is compatible with all other spray materials recommended with DDT and Parathion. It is easy to use—just dump Black Leaf 253 in the water as the spray tank refills.

Cuts residue problems. Black Leaf 253 provides long-lasting insect control with essentially no visible residue. Permits development of high-quality color and finish.

Start now to increase your profits by using economical, effective Black Leaf 253. Buy it from your spray dealer or write for full information. Look for the Black Leaf on the red and white package.

OTHER FAMOUS Black Leaf® SPRAY MATERIALS

Aramite Emulsifiable	Ferbam Wettable
Aramite Wettable	Lindane Wettable
Arsenate of Lead	Malathion Wettable
BHC Wettable	Parathion Wettable
DDT Wettable	Phygon* Wettable
Dieldrin Wettable	T.D.E. Wettable
Black Leaf 40®	TEPP 40%
Black Leaf 155	TEPP 20%
Chlordane Wettable	

Many other pest control products also carry the reliable Black Leaf label—insecticides, fungicides, weedicides and rodenticides. Ask for full information.

*T. M. of U. S. Rubber Co.

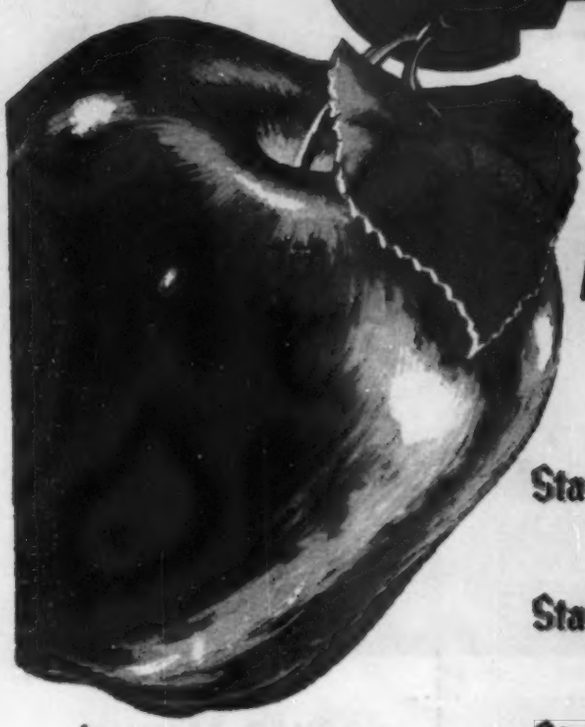
The "LEAF" that protects the tree is a "Black Leaf" SPRAY

Black Leaf

Diamond Black Leaf COMPANY • RICHMOND, VIRGINIA

Stauffer CAPTAN 50-W

the MOST for your MONEY!



Stauffer CAPTAN is the *best* protection ever offered by *any* fungicide! Effective against a great variety of parasitic fungi.

Stauffer CAPTAN is *safe* to fruit and foliage, allowing vigorous healthy growth through the season. Minimum leaf spotting or russetting on susceptible varieties.

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In Canada, STAUFFER CAPTAN is available through C.I.L. and Cooperative Federee de Quebec.

Read about Stauffer CAPTAN in the May issue of Coronet

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American Fruit Grower
Fruit for Health

Handling CHERRIES In Water

Processors plan extensive use of new method during coming season

By H. P. GASTON and J. H. LEVIN

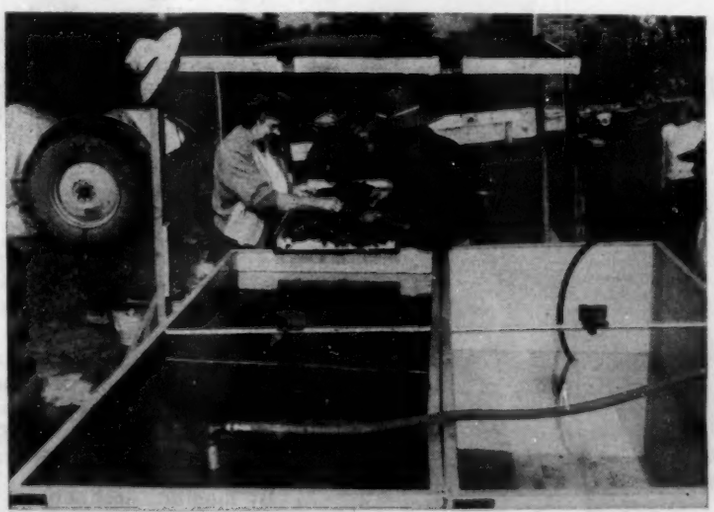
IT IS expected that many millions of pounds of red cherries will move to processing plants in tanks of cold water during the 1955 cherry harvest season. Several Michigan processors plan to use the method extensively. Two Wisconsin canners also expect to move fruit in this way, and processors in other parts of the country will probably follow the trend.

Before consumers can enjoy cherry pie the crop must be grown, harvested, handled, processed, and merchandised. Growing and harvesting problems have received attention for many years. The same is true of processing and merchandising difficulties. The handling that is necessary between the orchard and processing plant has long been neglected, and improved handling techniques have been needed. The industry was quick to recognize the merits of a new system that promises to reduce costs and at the same time do a better job of preserving on-the-tree quality.

In 1952 Michigan State College and the USDA initiated some cooperative studies that they hoped would throw light on cherry handling problems. In that year a few experimental lots of cherries were moved in water. The results were so promising that it was decided to continue the work the next season on a larger scale.

In 1953 almost half a million pounds were handled in water from receiving stations to processing plants located from 25 to 250 miles away. Upon arrival at receiving stations the cherries were placed in tank trucks containing cold water.

(*Continued on page* 38)



Cherries being poured from picker's pail onto sorting table from which they go directly into tank trucks. The grower in whose orchard this picture was taken handled his 152-ton crop without the use of a single lug.

The authors, H. P. Gaston and J. H. Levin, have been working jointly on this project in Michigan. Mr. Gaston is with the Department of Horticulture, Michigan State College. Mr. Levin is agricultural engineer with ARS-AERB, Mechanical Preparation and Conditioning Section, USDA.

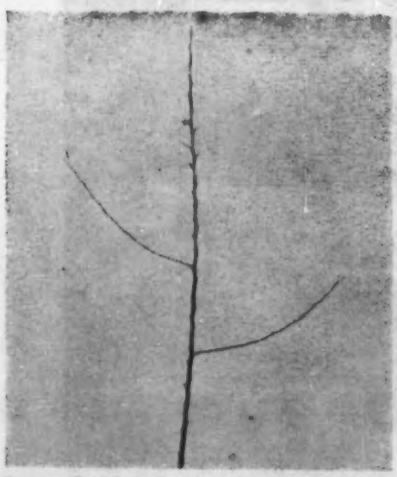
New Methods of TRAINING DELICIOUS

A more spreading tree will result from the use of any one of three new systems

By LEIF VERNER
University of Idaho

Delicious tree 2 weeks after cutting back to a stub in the trunk renewal system of pruning.

The best shoot has been selected for the new trunk; all other shoots have been removed.



Two scaffold branches that have developed the first year by the trunk renewal system.

YOU can get wider crotch angles and more spreading branches on your Delicious apple trees by making a few changes in your pruning practices. Experiments in Idaho have shown that the angle formed by a scaffold branch is determined largely by a hormone produced by leaves and shoots higher on the trunk. This hormone moves downward through the bark and influences the growth of buds and branches below where the hormone originated.

Most apple trees are cut back to a height of about 36 inches when they are planted. You have probably noticed that when this is done the top 3 or 4 branches make vigorous growth and narrow angles. This is because there are no shoots or leaves above them to produce the hormone necessary to control their growth. The result is a cluster of upright branches that will always have narrow angles and will make trouble in later years if they are not removed.

Branches lower on the trunk will make less growth but will have wider angles. These are the kinds of branches that should be used for the framework of the tree. It is easy to obtain them by any one of three new systems of training developed through the Idaho experiments. These are as follows:

1) By delayed heading.

If you ordinarily head the trees back to 36 inches at planting time, cut them back to 42 inches instead. When the new shoots are about 4 to 6 inches long, head the tree back again, this time to the 36-inch mark. You will be removing the upper cluster of narrow-angled branches, but not until they have caused the branches below to form wide angles.

2) By modified deshooting.

In deshooting, the newly planted tree, preferably a whip, is cut back to 48 inches. As soon as most of the new shoots are 2 or 3 inches in length, those desired for scaffold limbs are chosen and all others are pinched off. Fairly wide angles are produced this way, but they soon grow narrow unless there is some growth on the trunk between the scaffold limbs. In the new method (modified deshooting), the shoots growing between the scaffolds are not removed but are cut back severely two or three times during the first growing season. Shorten them to within an inch or two of the trunk. This helps to keep the angles wide in the main framework branches.

3) By trunk renewal.

This is a pretty rough treatment but by far the best. As soon as the young tree has been planted, cut it back to about 2 inches above the graft union. Drive a stake beside it to mark it and to protect it from damage by tillage implements. Usually in about 2 weeks or so there will be many small shoots on this stub. Some of these will be above and some below the graft union. Pick out the best one *above* the union and pinch off all the rest. The shoot you save will make a new trunk. At this time you should spray or dust the ground for a distance of 2 feet around the young tree with DDT to kill cutworms which might kill the single, tender shoot that the life of the tree depends upon.

The new trunks will require some attention the first growing season. Pinch off any branches that start below 18 or 20 inches, or at whatever height you want your lowest branch. As branches form higher, select those you want for scaffolds. Cut any others back to about an inch long but *do not* remove them.

Sometimes the new trunks grow the first year as whips; that is, they form no branches. *Do not* cut them back at the beginning of the second year. Leave the terminal bud or shoot until all of the scaffold limbs

(*Continued on page* 41)

One Man Can Harvest 100 TONS a Day!

Mechanical grape harvester leads the way to new-type trellis and long-stemmed varieties

By LAURENCE R. MARTIN

WILL lugs of grapes someday bear the marking, "Untouched by Human Hands"? The University of California has been working on mechanical harvesting of grapes for the past two years, and engineers have reached the point where the machines can be demonstrated doing a fairly good job.

The first step in the job was to get the grapes in position so that a tractor-mounted cutter-bar could get at them, and that was done by the department of viticulture with new-design trellises that let the clusters hang free. Even though the trellis-cutter arrangement recovered 90 per cent of the crop last year, as compared to 80 per cent in the preceding year, engineer Lloyd Lamouria says: "Development of both the machine and the trellis arrangement is still in its infancy. Much research is still needed."

All the work that has been done so far has been with raisin and wine varieties; the engineers do not think that the same approach is applicable to harvest of table grapes. Successful wine grape harvest by machinery may even have to wait for new varieties with longer stems, according to Albert J. Winkler, chairman of the department of viticulture at the Davis campus of the university.

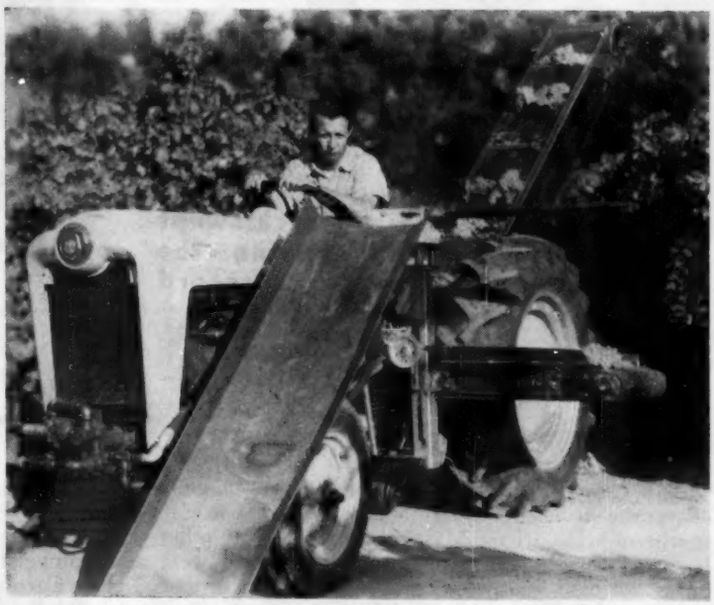
"A long stem is necessary," said Winkler, "for the machine to remove the fruit without damaging it unduly. Varieties with longer stems than those of Thompson Seedless were planted this year, but most varieties are unsuitable."

Where a man can pick 1½ tons of wine grapes per day by hand, with the new machine that same man could harvest 100 tons of grapes in the same length of time.

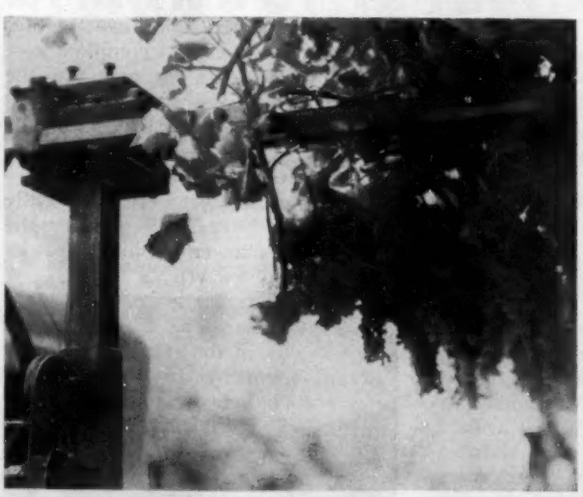
Dr. Winkler says some hand work will probably always be necessary to get the clusters to hang free of the trellis, but this work will come during a slack summer season.

Lamouria plans further adaptation of the cutter so that it can lift interfering canes clear of the cutter bar. He will also be experimenting with a conveyor and spreader to place raisin grapes onto a continuous paper tray for drying; a conveyor-elevator to deliver wine grapes direct to a bulk transport; and a conveyor-elevator to place table grapes in field boxes.

And who's to say that 10 years from now we won't see lugs of grapes labeled, "Untouched By Human Hands"? THE END

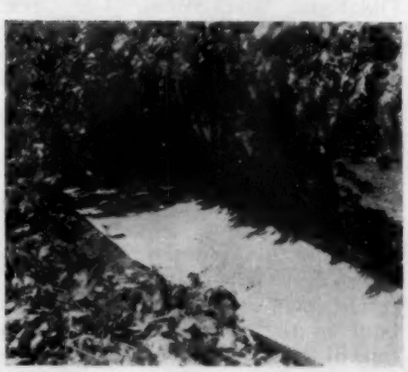


Ernest Head, a research laboratory worker, operates the mechanical grape harvester developed by University of California.



The tractor-mounted machine features a hydraulic, adjustable-height cutter-bar, used with new-type trellises which let the grape clusters hang free.

Below — Continuous paper tray would be used to catch grapes for drying.



The BIG FREEZE

No peach orchard was spared when the icy blasts of late March swept through the South causing the most extensive damage on record

One-year-old peach tree planted in Georgia in January shows killing back of shoot growth due to freezing temperatures in late March. Trees so far advanced will probably die.

THE winter of 1954-55 had been erratic in most southern areas. In southern Missouri on March 1 fruit buds were still dormant—in fact, more dormant than veteran grower E. Longenecker had ever seen them at that time of year.

There followed two weeks of summer weather with temperatures soaring to 90° F. Blossoms were bursting open all over the South. But on the 25th snow fell in Missouri, and on the morning of March 26 it was 2°.

In Georgia—just 70 days after peach growers had learned, in mid-January, that "chilling" hours would not be a factor this year—record-breaking icy blasts destroyed the prospective $10 million peach crop.

The freezing temperatures of March 26 and 27 likewise destroyed commercial crops in the peach producing states of South Carolina, North Carolina, Florida, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, and Texas. Very few peach buds survived the freeze in southern Indiana, Kentucky, Tennessee, southern Missouri, and New Mexico. In Virginia, practically all peach buds were killed in the area from Rockingham County south in the Shenandoah Valley.

No serious damage seems to have occurred to peaches in West Virginia, Maryland, and southern Pennsylvania where development was less advanced.

The stage of development of peach buds in the southern states at the time of the freeze ranged from shuck-off to pink bud; temperatures from zero to 24°.

All other tree fruit crops in the South were also damaged. It is reported that North Carolina's apple crop will not amount to even 5 per cent. In western Arkansas the apple crop is practically a complete loss, with a few apples expected in the eastern half of the state. The grape crop is 75 per cent destroyed, and the strawberry crop was decreased by another 25 to 35 per cent.

Pears and plums were practically wiped out in Texas. In Kentucky, the apple crop may be completely destroyed. Blakemore strawberries were damaged. Tennessee Beauty which blooms a week later probably escaped damage.

Browning in cambial region following 14.5° F. temperature at Experiment, Ga., March 27, 1955.

Oldtimers in Virginia look for a 3 million bushel apple crop. Production in 1954 totaled about 11 million. "At first it was hard to realize that the damage to peaches and apples was so devastating," John F. Watson, secretary, Virginia State Horticultural Society, states, "but when grower after grower stated he was letting his help go, it became apparent that we suffered a disaster."

The only varieties that seem to have survived in the Vincennes area of Indiana are Rome Beauty, Golden Delicious, and Winesap.

It is estimated the Illinois apple crop has been damaged to the extent of a million and a quarter bushels or two-thirds of the entire crop.

The big question: Did the trees survive the extreme temperatures?

Georgia Experiment Station horticulturist, E. F. "Rip" Savage states: "Losses will be confined largely to trees which were set in the spring and early winter of 1954."

Extension horticulturist Roy J. Ferree of South Carolina reports that very favorable climatic conditions have prevailed since the freeze and that if any severe permanent damage is suffered it will be primarily on trees recently set plus one and 2-year-olds.

In the Sandhills peach area of

(*Continued on page* 36)

State NEWS

- **Grape Research Fund Voted by New York Growers and Processors**
- **Pennsylvania Growers Swap Growing and Marketing Experiences**

Thinning Fruit Buds

WASHINGTON—Climatic conditions during the past fall and winter and this spring have been ideal for fruit trees. After making good average growth, the trees went into the winter in fine condition. Vigor is good and there is lots of fruiting wood. Many trees generally thought to be too young to bear are loaded with buds.

So far there has been little or no frost damage to fruits of any kind. Blossoming (Apr. 12) seems to be about 10 days later than normal. Continued warm weather for the next several weeks, or a shift to cold weather, would change the picture.

A very late season focuses attention toward small sizes. There will be lots of chemical thinning and an unusual effort to get hand thinning done thoroughly and on time.

There has been considerable interest in tree planting, particularly apple. During the past several years most plantings were replacements. A year ago an increase in the percentage of trees planted in new land was apparent. This year the trend in this direction is even more pronounced, and it now looks as though this trend will continue for some time.—*John C. Snyder, Sec'y, Pullman.*

Tips on establishing young apple trees in central and eastern Washington are contained in Mimeo. 1661, available from the Extension Service, State College of Washington, Pullman.

Grape Research Fund

NEW YORK—Concord grape growers and processors are going to spend $30,000 during the next three years to further research on grapes.

The fund is being granted the state experiment station at Geneva through a unique co-operative organization of producers and processors, the first of its kind in the state.

Grower Winfield R. Stebbins, of Sheridan, first broached the idea a little over a year ago.

"I think the things we have been learning from the research men about growing grapes have helped us stay on top and I think we'll have a better chance of staying there if we take some steps to insure that research is moved along at a faster pace," he reasoned in discussions with other members of the Chautauqua County Farm Bureau fruit and vegetable committee.

They set up the New York State Concord Grape Production Research Fund organization and invited growers and processors in adjoining Erie County and in the Finger Lakes belt to join up.

The bulk of the Chautauqua area's grapes are marketed through co-operatives. Consequently, it was possible for most processors to contribute in behalf of their growers. Plants contribute 25 cents for each ton of Concord grapes handled.

When the first payment was made to Geneva Director A. J. Heinicke at Fredonia on March 15, about 85 per cent of the New York grape crop was represented. After making the $10,000 first payment on the research grant, the organization still had over $5,000 in the treasury as a bulwark against a bad crop year in 1955 or 1956.

The money is to be used for research into control of grape phylloxera and nematodes, color, and overcropping. Processors also hope to get some new Concord-type varieties which will spread the harvest season and reduce the present one-month rush. Both growers and processors hope to find some relatively effective way of stabilizing the size of the annual crop.

The research at the Fredonia vineyard laboratory will be carried on by Drs. Nelson Shaulis, pomologist, E. F. Taschenburg, entomologist, and Alvin Braun, plant pathologist. The fund will provide for additional technical help and equipment.—*Fred McKee, Dunkirk.*

Growers Relate Experiences

PENNSYLVANIA—A group of fruit growers related their practical experiences at the Pennsylvania State Horticultural Association annual meeting in York recently.

John Baugher, nurseryman from Aspers, spoke of variety trends as indicated by nursery sales. "We are not yet ready to go all out for dwarf types until we are more certain of rootstocks and their performance under our varied conditions," he said. "The trend toward red strains of apples continues. There are definite shifts to earlier varieties of peaches and to new areas in sour cherry plantings."

Irrigation costs and profits were discussed by **Melvin H. Hoffman** of Ontelaunee Orchards. Approximately 75 per cent of irrigation costs lie in fixed charges, while the remainder is operating expense. Under Pennsylvania conditions, it takes from three to five years to pay for an irrigation system.

(*Continued on page* 33)

FRUIT PEST HANDBOOK

(FORTY-THIRD OF A SERIES)

DOUBLE BLOSSOM OR ROSETTE

DOUBLE blossom, or rosette as it is also called, is an important fungus disease of cultivated blackberries and dewberries in eastern United States. It occurs from New Jersey to southern Illinois and southward to the Gulf of Mexico. So far as is known, bramble fruits in states along the Pacific Coast are free of this trouble.

New infections take place in buds of primocanes during spring. In fall leaves from infected buds are paler than healthy leaves. In spring infected buds swell before healthy buds, and in the field they can be seen very easily.

Several branchlets may develop from each infected bud instead of the single branch which is formed from a healthy bud. These multiple branchlets form a rosette, or witches'-broom. Leaves in the rosette are paler than healthy leaves.

Usually several flowers form on each diseased branchlet, but occasionally none form. The infected flowers are elongated, puffed, and enlarged before they open. Infected flowers are usually sterile but occasionally they form a drupelet. Frequently the flower parts of infected flowers may develop into leaf-like structures. Soon after infected flowers open they are covered with a whitish substance which consists of spore masses of the causal fungus.

Amounts of branching and flower distortion differ among varieties. However, some rosette and sterile flowers are present in all susceptible varieties in infected areas.

Almost all wild species and cultivated varieties of blackberries and dewberries are susceptible to the disease. The Himalaya blackberry and the Advance dew-

(*Continued on page* 33)

Photographs show double blossom witches'-broom on the Jumbo blackberry, at top, and double blossom on the Lucretia dewberry.

Photographs Courtesy USDA

Here are 4 of the 8 . . . the AIR-AGE 8

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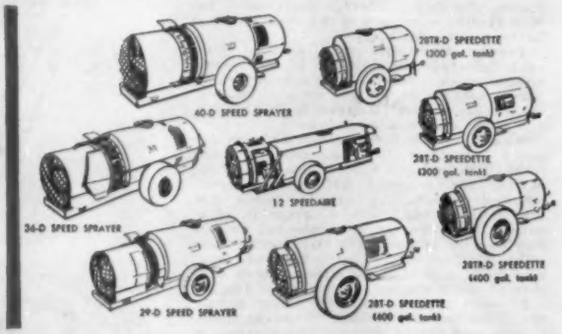

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DELAYING BLOOM

Will maleic hydrazide delay fruit bloom, thus overcoming frost problem?—*Arkansas.*

Investigations are still exploratory and there is nothing a grower can use in a commercial way. Some results with this and other compounds have been promising but there are no specific recommendations. Watch AMERICAN FRUIT GROWER for results as they are released.

SPRAY EFFECT ON BEES

Considering the fact that Agri-mycin 100 should be sprayed at 20 to 30 per cent of full bloom, what effect does it have on bees?—*Pennsylvania.*

Since both terramycin and streptomycin are being used for the control of certain bee diseases, the above formulation should not be harmful to bees if used according to manufacturer's recommendations.

PARATHION

Can I use this year parathion I purchased last season, or will it have lost some of its strength? —*New York*

American Cyanamid Co. advises that parathion formulations prepared with the recommended carriers should be satisfactory following a year's storage.

PLANTING TREES

How deep should a fruit tree be planted?—*New Jersey.*

Most nurseries recommend that the tree should be set just a little deeper than it stood in the nursery row. Others recommend that the bud or graft union be just below the ground level. A third idea to which we are partial is that the bud or graft union be one inch or more above the ground level after the hole has been filled and tamped thoroughly. A. N. Pratt of Tennessee, in commenting upon this method, says that the deeper the tree is set, the further the roots will be from the warmer, more fertile, and better aerated topsoil. There is more chance of roots drying out this way; however, chances are small provided the soil over the root zone and a foot or more beyond is kept free of weeds and grass up until mid-July.

EMULSIFIER

We are in need of a powdered emulsifier to be used with dormant oil. We understand the American Gum Products Co. manufactures a product of this type called Goulac. Can you give us the address of this firm?—*Georgia.*

Address the American Gum Products Co., 500 5th Ave., New York, N. Y.

CLARK DWARF STOCK

I would like to know of a nursery where I could purchase true-to-name Clark dwarf stock.—*Kansas.*

There are only two nurseries which propagate Clark dwarf stock: Stark Bros. Nurseries, Louisiana, Mo., and Wheelock Wilson Nursery, Marshalltown, Ia.

HEAVY AIRCRAFT TIRES

Where can I buy heavy aircraft tires larger than 1600x16, preferably with a rim size of 20 to 24 inches, for use as heavy spray rig tires.—*Illinois*

Try Tire Mart, 1432 Mullanphy St., St. Louis, Mo.; Martin Tire & Supply Co., 154 N. Emporia, Wichita, Kansas; Harmo Tire & Rubber Co., 804 Hammond Bldg., Detroit, Ill.

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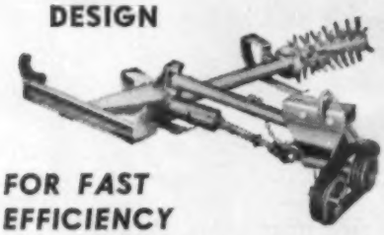

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30" self-cleaning spike roller cultivates 5' diam. swath in one or two fast circles around the tree. Roller extends 5' to right of rear tractor wheel for close-in cultivation. End of roller is designed to prevent damage to tree trunk.

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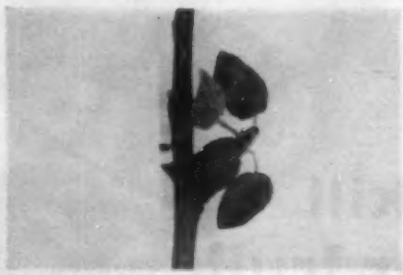
A Picture Study of APPLE LEAVES

ONE question often asked by apple growers around first cover spray time, especially in years when trees show a snowball bloom, is, "Why are the leaves on my apple tree so small?"

In the first place, the majority of spurs on such trees are blossoming. Size of leaves on a blossoming spur is associated with vigor of spur or branch and with capacity of spur to develop side buds.

There are two kinds of leaves on a blossoming spur—the primary or small leaves that develop at the base of the blossom buds and the secondary leaves that develop from a bud on the side of the spur. The primary leaves remain small. The size and number of secondary leaves will depend upon the vigor of the spur and the number of buds that develop on the side of the spur. A weak spur may produce none to only one secondary leaf, while a vigorous spur may produce one or two side buds each having three or more secondary leaves.

The number and size of leaves on an apple spur are influenced by the spray, fertilizer, and pruning treatment received the previous year. Trees defoliated the previous year from scab have smaller leaves and fewer side buds and blossoms. The trend today toward production of highly colored, firm fruit by limiting the amount of nitrogen fertilizer is responsible for the poor growth condition, the weak spurs, and the tendency toward biennial bearing.—*E. J. Rasmussen, University of New Hampshire.*



A weak spur with primary leaves only. Spur is too weak to set fruit or develop a side bud.

Weak spur developed only one side bud, produced one secondary leaf, and set one fruit.

Moderately vigorous spur developed 3 large and one small secondary leaves on side bud, and 2 apples. Leaves reached about full size.

A good, vigorous spur that developed one side bud with 6 secondary leaves. Two of the leaves are still growing. The spur set 3 fruits.

A moderately vigorous spur that developed 2 side buds, one with 4 and the other with 2 secondary leaves. The spur set 3 fruits.

Over-vigorous spur that developed 2 side buds. One produced shoot with 7 secondary leaves, other 4 secondary leaves. Spur set 2 fruits.

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Phygon-XL effectively controls apple scab, bitter rot of apples and peaches. Brown rot and brown rot blossom blight of peaches and many other stone fruit fungus diseases are also controlled. Its added advantages are low cost per acre, ease of use, high compatibility and the fact that it does not harm pollen and bees nor affect flavor and odor of crops. Write for Phygon Orchard Bulletin 32.

Says progressive Michigan grower A. J. Schaefer, Jr., of Schaefer Orchards:

"We have used Phygon-XL for 4 years now, not only as a dilute spray but in 4X concentration and in dust form. *It has given us very good control of scab*... during severe scab conditions. It's also economical to use."

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SCAB CONTROL
At Chazy Orchard

AT big Chazy Orchard in Clinton County, New York, the annual war against apple scab got under way late on April. Orchard manager Don Green hopes to repeat this year the orchard scab-control record set in 1954, when apples coming from Chazy trees were 99 per cent scab-free.

Last year the 11-man crew operating the orchard's 5 speed sprayers applied the amazing total of 72,000 pounds of fungicides and insecticides to the 25,000 bearing trees spread over 750 acres of the orchard, called the largest McIntosh orchard in the world. In all, the trees were sprayed 17 times.

"I won't say we've licked scab at Chazy, but we came close to that goal last year," Green says. "What helped us go from 90 per cent clean apples in 1942 to 99 per cent clean last year was the gradual shift we have made from mild to "hotter" fungicides.

"Our spray timing is not as critical as when we used mild fungicides, since some of the new chemicals have a 'kickback' effect. They also promise some economies since they are applied at lower dosages, cutting handling costs. There is a possibility, too, that they may permit us to skip sprays. On one of our test blocks we have been able to eliminate 5 of our usual 14 fungicide sprays."

Spray Program for 1955

In 1955, Green says, he will depend for scab control on two fungicides, Phygon and ferbam. Phygon will be used for primary scab control, and ferbam for secondary. If a long wetting period delays spraying, and scab gets a foothold, mercury will be used to eradicate it.

Phygon is a protectant, but it can also knock out scab up to 50 hours

Scab control spray is cut off as the sprayer reaches the end of a row in the Chazy Orchard.

after start of rain. Phygon's ability to wipe out scab spores already infecting the tree is referred to by growers as a "kickback" effect. Green has been testing it on a 22-acre block since 1947, and first used it in his full orchard spray program in 1953. It was on the Phygon block that he was able to cut out 5 fungicide sprays, and scab control costs on this block ran $14 an acre below average orchard costs.

Green started testing ferbam on a 7-acre plot in 1948, and began using it on the full orchard in 1953. It is a protectant and gives a good finish to apples. Green said the ferbam plot has consistently produced a crop high in quantity and quality.

14 Fungicide Sprays

The '55 spray program at Chazy calls for approximately 14 fungicide sprays. Late this month the first, green tip spray will be applied, and the additional sprays will follow at roughly 7-day intervals, unless weather conditions force a speed-up. Insecticides will be mixed in with many of the sprays, depending upon conditions. A few insecticides and a hormone spray will wind up the season. It takes roughly 4 days to put on each spray at Chazy.

The pre-bloom sprays will be Phygon. Phygon will be sprayed through calyx except during bloom. First cover —and bloom, if necessary—will be ferbam, and so will the balance of the fungicide sprays. This is the general program, except that mercury will be used in scab emergencies.

The Phygon is mixed 4/5 of a pound to 100 gallons of water, and applied at a regular dosage of 5 gallons per tree. Ferbam is mixed 4-4/5 pounds per 100 gallons of water in early sprays, and 3 pounds per 100 gallons in later sprays. It is also applied at a rate of 5 gallons per tree, although in early sprays about 3 gallons per tree is the application rate used for both chemicals. Both chemicals are compatible with most insecticides.

Per Acre Costs

Green believes that during the 1955 season he will use more than 4 million gallons of diluted chemicals, at 3X concentration. He estimates his chemical and labor costs for the spray operation will be roughly $50 an acre, figuring 35 trees to the acre. This is in decided contrast to spray operations back in 1942 at Chazy.

In 1942 only 6 sprays of lime sulfur were applied. In 1955 about 17 are planned. THE END

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Ferbam Fungicide

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2. Gives better finish. Though "Fermate" is tough on diseases, a straight "Fermate" program is fine for finish of red varieties such as Red Delicious, Wealthy, Rome, McIntosh, York, Cortland, Winesap, Northern Spies and others.

3. Increases yields, orchard vigor. The long-use history of "Fermate" has proved its beneficial effect on general orchard vigor by consistently higher yields, over a period of years.

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For free illustrated booklet on how "Fermate" can help you profit more from your orchard, write Du Pont, Grasselli Chemicals Dept., Room D-4032 Wilmington, Del. In Canada—Du Pont Company of Canada Limited, Box 660, Montreal, Canada.

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

GOLDEN DELICIOUS KEEPS WELL IN FILM

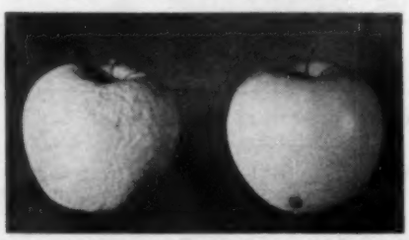
THE storage life of Golden Delicious apples can be prolonged in the relatively dry conditions of the average home cellar. Storing the apples in well-ventilated (perforated) polyethylene bags appears to do the trick, J. D. Winter, of the department of horticulture, University of Minnesota, has found.

On the basis of one year's limited tests, it appears that the storage life of varieties such as Golden Delicious can be prolonged by use of such bags under either dry or relatively moist conditions.

Two cellars were selected for the test. One provided the typical dry atmosphere of the average home cellar. The other was the university's apple storage room where a fairly high relative humidity is maintained by watering the floor weekly.

Haralson and Golden Delicious apples were picked from single trees of each variety about 10 days before the test. Haralson is not subject to shriveling under good storage conditions, but, like other varieties, it often shrivels in the average home cellar. Golden Delicious is notoriously difficult to store because it shrivels easily.

The apples were stored in 4-quart till baskets, each holding about 3 pounds. The apples in half the baskets were packed in polyethylene bags of .0015 inch thickness and were closed at the top with Twist-ems. Each bag was perforated with 36 holes about ¼-inch in diameter.



Golden Delicious apple at right, after five months' storage in polyethylene bag, shows little shriveling. Apple at left was not bagged, shriveled.

Apples were held in storage for about 6 months, and the bagged apples of both varieties, in both the "dry" and "wet" cellars, showed less shriveling and generally were of better dessert quality than the non-bagged apples.

BUD SPORTS OF DELICIOUS

A listing and an evaluation of the new early coloring bud sports of Red Delicious has been prepared by Edwin Gould of the West Virginia Agricultural Experiment Station, Kearneysville, W. Va. Copies were distributed at some of the winter meetings of horticultural societies, and a limited number is still available for readers who write direct to Mr. Gould.

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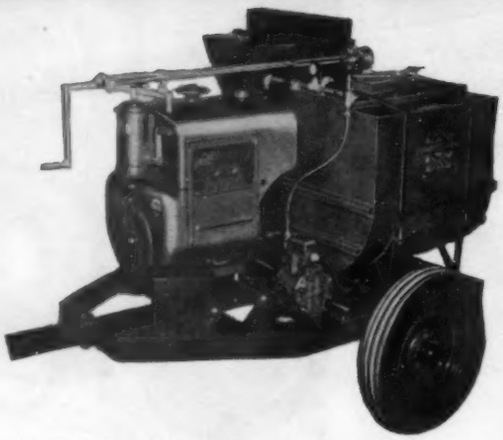

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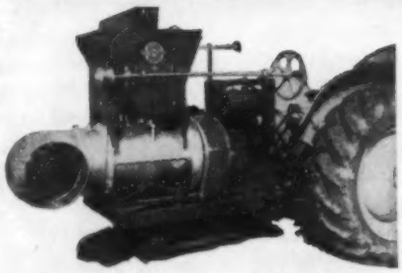

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BEE HABITS

BEES do not fly during the rain and even 25-mile winds will cut flight about 40 per cent, says George Abrams, extension bee specialist, University of Maryland. Also, when the temperature drops below 70°, there is no good flight of bees.

Bumblebees are hardy, but are dormant during cold weather, and 100 bees make a large colony. Honeybees fly at any favorable time, and of the 45,000 bees per colony, there are two bees working in the hive and one in flight. Bees stay with a single crop, and if they start with apple bloom, they stay with it. They stay close to the area in which they start work, and may work one tree or one side of a tree. Excess bees may wander, and do a lot of pollinizing. Bees can fly three miles, but only if they must.

Abrams suggests getting the bees in the orchard in time to form good flight habits. Usually one to three hives per acre is enough. If conditions are favorable, the pollinating

John Staby

Apple pollinating time.

job can be done in a single day, or sometimes a half day. It is not necessary to scatter the hives. They may be placed in a small apiary in the most favorable spot in the orchard.

DOUBLES YIELDS

DR. J. M. BEATTIE, of Ohio Experiment Station, has found a way to double yields of Baldwin apples. In tests over a four-year period, he simply doubled the amount of nitrogen used to fertilize the trees.

Instead of the usual ¼ pound of a 16 per cent nitrogen carrier, or its equivalent, per year of tree age, he used ½ pound per year. For example, 13 pounds of sodium nitrate were applied to a 26-year-old tree.

Dr. Beattie reported more *total bushels* of well-colored apples on each tree, although there was a decline in the *percentage* of well-colored fruit per tree. His conclusions are substantiated in New Jersey, where similar tests have been made on Delicious apple trees.

1. **"NuGreen" works fast** as a foliage spray. Combine it with pest-control sprays to save time, labor. Won't corrode equipment.

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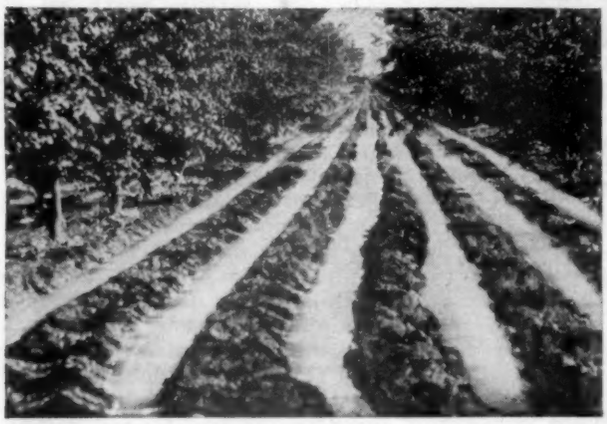
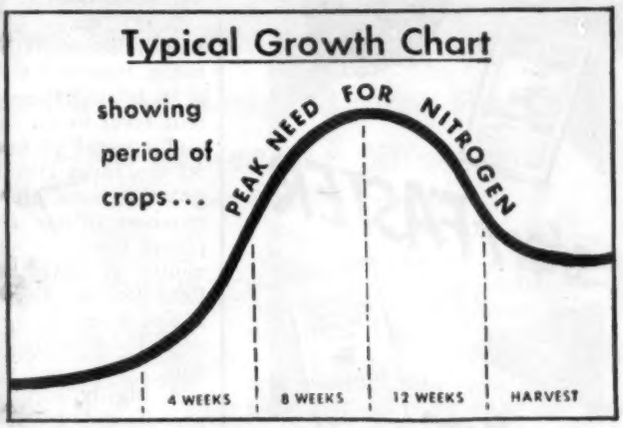


3. **"NuGreen" is ideal for** application in irrigation systems. It dissolves readily in water, reaches roots because it's not fixed at soil surface.



4. **Different fruits need nitrogen** at different growth stages. For a quick nitrogen boost when the need is greatest, apply "NuGreen" in foliage sprays. For season-long feeding, apply early as top dressing.

For the most profit from supplemental nitrogen ...use NuGREEN® FERTILIZER COMPOUND

Examples on this page illustrate some of the many reasons why "NuGreen" is your best buy when your crops need more nitrogen than is included in your other fertilizer materials.

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GUIDE TO NITRATE NEEDS OF GRAPES

A PROMISING new method of telling whether a vineyard needs nitrate fertilization has been developed on the Davis campus of the University of California.

Viticulturist James A. Cook has found that the nitrate level in the leaf petiole at full-bloom shows promise as a guide to whether the grapevine needs more nitrate, and how much of an increase in yield can be expected from such fertilization. A yield in increase of at least 10 per cent is needed before the expense of application is justified by increased returns.

Cook plans further testing of this petiole-sampling technique to develop a diagnostic procedure that will indicate accurately whether or not a vineyard should be fertilized.

In testing the petiole nitrate-content level as an indicator, fertilized and control plots were laid out in 50 vineyards throughout the grape-growing areas in California. Ammonium sulfate at the rate of one pound per vine was applied in late winter of 1951, and again in 1952. Leaf-petiole samples were collected at five intervals during the two-year period and analyzed for nitrate content.

A highly significant relationship was found to exist between the petiole nitrate level at full bloom and the yield results after fertilization. Only about one-fourth of the vineyards showed an increase that justified the application of nitrate fertilization.

BOOSTING YIELDS

BOOSTING yields of peach trees with the best cultural practices rather than by reducing the distance between trees is recommended by Richard W. Harris, pomologist, University of California, Davis.

Anyone who tries experimental close plantings, Harris warns, should be fully aware of consequent problems: Lack of space will make it more difficult to handle equipment during cultural and harvesting operations; providing sunlight to low fruiting wood is more difficult; more humid conditions in close-planted orchards may on occasion favor development of brown rot.

On the other hand, according to Harris, heavy, early production is well within the realm of possibility at conventional planting distances with what is now known about pruning, thinning, and other cultural practices. Maintaining low fruiting wood is vital to high yields, he states.

Harris lists four important points in maintaining low fruiting wood: Work for a low tree, which makes pruning and harvesting easier; leave plenty of fruitwood and fruit on young trees in pruning and thinning operations; don't over-fertilize, which encourages top growth, shading the low fruiting wood; keep tree healthy, since diseases and under-irrigation affect low fruiting wood the most seriously.

DISEASE-RESISTING STRAWBERRY

STRAWBERRY growers are circling 1956 as the year for general production of a new high-yielding disease-resistant variety in western Oregon areas.

The new variety, developed at Oregon State College by USDA horticulturist George Waldo, is resistant to red stele, a disease that has been crippling, stunting, and weakening entire fields of the famed Marshall and other older varieties. It is also tolerant to virus and is believed to be resistant to other diseases common to strawberry plants.

So far the new variety has been identified only as U.S.-Oregon 2172. It will be given a name shortly as it is ready for increase by plant propagators this year. Waldo reports that it will receive its public release for 1956 with a name.

Like the Marshall, the new variety is a good freezing berry but is expected to outyield the Marshall in irrigated areas where red stele is a problem. Western Oregon trials this past summer gave yields as high as 7 and 8 tons per acre. In some of the research fields it has harvested 11 tons to the acre.

STOP BLACKLINE

REPLANTING on new rootstocks seems to be the only way of stopping blackline, a disease which is causing slow death to many walnut orchards.

Blackline is an unexplainable separation of the graft union of English varieties grafted on black walnut rootstocks. Since most commercial walnut trees in Oregon were grafted by this method, blackline represents a serious threat to the Oregon nut industry.

Blackline occurs when trees are 20 to 30 years old, and interferes with the normal movement of plant food. It is often accompanied by a crown rot just below the graft.

Oregon State College Horticulturist Quentin Zielinski has been testing various English rootstocks, and has found Manregian to be outstanding. In the light of present knowledge, Franquette tops on Manregian should result in hardy, high-producing trees.

Grower Reaction to NEW S. S. LAW

ALTHOUGH considerable opposition has been voiced by many fruit growers against the new social security law, the attitude of others seems to be, "We've weathered worse storms than this. Let's wait and see what develops."

Since the fruit industry employs many short-term, migratory workers, the new amendment necessitates more bookkeeping on the part of many growers. Social security must be deducted from the pay of all workers who earn $100 or more a year from one farm employer. (The old bill provided for a $50 per quarter exemption and a 60-day qualifying period.)

The opposition to the new law has resulted in the passage of resolutions opposing the law by some fruit growers' groups.

Speaking for the peach industry, the National Peach Council termed the act "an unnecessary burden."

Their resolution requested Congress to reinstate the 60-day qualifying period, and to put participation in the act on a voluntary basis. A similar resolution was passed by the Michigan State Horticultural Society.

The New Jersey State Horticultural Society pointed out that "the administration of the migratory labor would be extremely difficult."

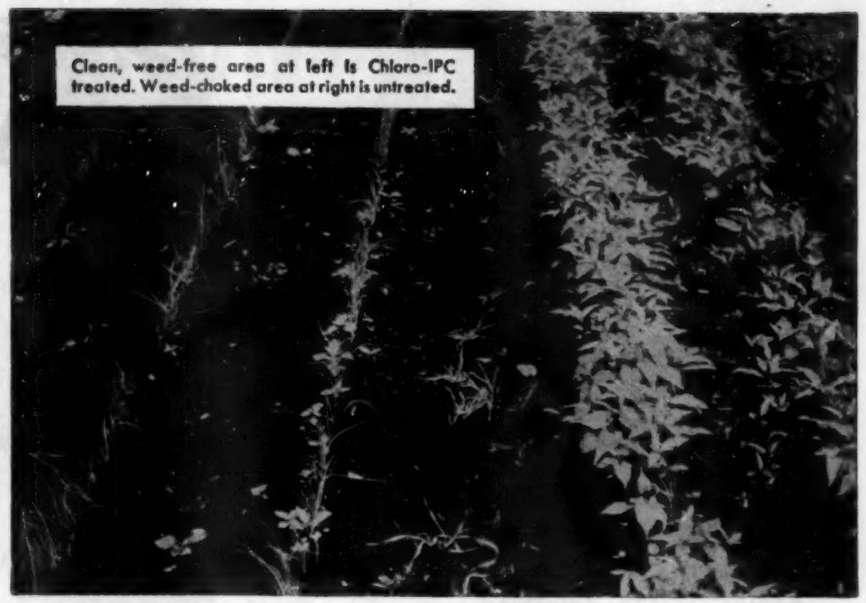
The Oregon State Horticultural Society recommended setting the minimum earned income limit for the harvest of perishable fruits and vegetables at $250. They agreed in principle with the act, but objected to the "detailed and multiple bookkeeping and payroll records."

In Massachusetts, the Fruit Growers' Association called for setting the minimum income limit at $500.

RECIPE BOOKLET

AN attractive pocket-size booklet printed in red and black and containing the recipes which won top honors in the 1954-55 Pennsylvania Apple Dessert Contest is available for the asking. The booklet is published by The C. H. Musselman Co., Biglerville, Pa., processors, as a public service to the apple growing industry. Address your request for a copy to Mrs. Eleanor Griest, Flora Dale, Pa., who is director of apple dessert contests. The contests, held each year among home economics students in high schools, are sponsored by the women's auxiliary of the State Horticultural Association of Pennsylvania.

Pennsylvania apple dessert queen for 1954-55, Helen Austin, of Hallstead, Susquehanna County.



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Since Chloro-IPC appears to exert its maximum weed controlling effects on germinating seeds . . . it should be applied before weed seeds germinate.

Soil type and temperature are important factors in determining effective weed control. Normal rainfall appears to be beneficial since the residual period of the Chloro-IPC is lengthened and the activity increased. Heavy washing rains which move the soil will reduce or nullify weed control.

Tests show that for seeded onions and onion sets, good weed control can be accomplished with 4 to 8 pounds of Chloro-IPC per acre on muck, or 4 to 6 pounds per acre on mineral soil.

Post emergence treatment (over tops) has been successful. Here again, application of Chloro-IPC should be made prior to the germination of the weed seeds.

The spray application of Chloro-IPC is very simple; however, care should be taken not to overdose since it will reduce the stand.

For further information on Chloro-IPC and how it can increase your profits, contact any of the manufacturers shown below.

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WOODS ROTARY CUTTER FOR BRUSH SHREDDING AND MOWING

Mr. Albert J. Livezey of Barnesville, Ohio told the 107th Annual Meeting of the Ohio State Horticultural Society of actual results with his Woods Rotary Cutter. He said, "We have no exact record of time saved but we feel that at least half is saved. While we have had only one season's experience, we feel that a Woods Rotary Cutter for brush disposal in the orchard is one of 'the finds' of our day. We have never, I believe, found anything about which we are so enthusiastic.

Machine shown is Offset Model 80 with orchard shield. 9 other models 42" to 114".

"Its use is not limited to brush disposal. It's the 'cat's meow' for orchard mowing." "Two or three farmers here have said that this Rotary Cutter is the best machine on their farms. The general farmer has many uses for this cutter. Corn stubble or corn stalks left after picking can quickly be put in shape for plowing or discing."

For a complete copy of Mr. Livezey's talk, send the coupon below.

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WINDFALLS

It is said that Isaac Newton while sitting under an apple tree was struck on the head by a falling apple. Thus he conceived the great truth of his Law of Gravitation.

By HENRY BAILEY STEVENS

A Child and a Bud A GOOD thought for May from L. Burns of Ocala, Fla.:

"No one knows what a child is thinking when he lays his head on a limb of a tree and gazes into a half-opened bud. He is close to his God. The blooms and his Creator merge into an awe of all that is good and beautiful. Yes, children get to know God very early in an orchard in bloom; for God walks with them down each row of fairy mist."

He Found a Way of Life PARATROOPER Eli H. Howell of Camp Hill, Ala. (incidentally he is president of Lyman Ward School), came out of World War II thankful to be alive if not entirely whole and with a deep-seated but dimly defined urge to do something constructive for society to help compensate for the havoc and misery in which he had participated. The former practice of law did not satisfy. Then one day he decided to look at an old neglected pecan orchard which was for sale.

"From the second I looked down those rows of battered, broken, and half-starved trees, I knew a man and his fate had met," he writes. "I can't describe the excitement with which I stumbled over broken terraces and tore my way through shoulder-high briars and brush. That orchard needed me! During the past three years I have plowed, terraced, limed, fertilized, sowed clover and grass, pruned, sprayed, mowed, and even performed surgery on roots gnarled and rooted with crown gall. I have medicated and bound up the wounds. . . . I have fed and restored the broken bodies of these majestic producers of one of nature's finest foods. I feel at last that I have compensated in some small measure. In doing so I have been compensated a hundredfold. I have found a way of life. I am an orchardist."

A Letter from Leona ONE of our greatest needs has been to hear more from the home side. Those values we have been talking about, not to be measured in terms of money, center around the hearth. How do the orchard women feel? That is our main question. A very good answer to it comes in the following letter from Mrs. Leona Hassert of Caledonia, Wis. Originally written in response to a query from her sister, it wins our prize for this month.

Dear Polly:

Wisconsin's cold winter is over, April was the month of "awakening." Some of our birds came back, looking over the trees, scolding and chirping, and inspecting our pruning job. With pruning finished we looked forward to the trees "coloring" when the first warm sun brought up the sap and made them living harbingers of spring, bowing and waving a happy Hello to the summer and warm weather ahead. Even the bees started housecleaning and getting ready for their first reconnaissance. They wintered well and though I will be very busy extracting honey just at apple packing time, I still look forward to doing the job because of its rich rewards.

In your last letter you wondered why we planted our orchard and decided to move our family to the country? After all these years I am just as sure as I was when we moved here that this is the place to raise a family to become healthy, honest, upright, and with a keen awareness of God's great plan for each of us. When our children were smaller, they learned valuable lessons while they played. They enjoyed their chores because they learned that what they did with their hands resulted in the reward of money earned, little tasks matured to the great pleasure of having accomplished something. They were little apprentices in the trade of Living. Each season brought some problem they had to meet and face.

Our children and we, also, learned to live with our neighbors. We call people who live five or six miles distant, "our neighbors" and they really are in every

sense of the word, and "Love Thy Neighbor" is not to be treated lightly. Church, School, and Home are very closely knitted into a well-rounded and happy home life. Sure we have to drive our boys to the basketball game some evenings—but if we didn't we would not get to see the North Central team beat West High, and who could miss that? And besides our neighbors are there, so we have a fine evening after the game.

Shall I change all the joy of remembering our children growing up to experiment with raising chicks, bunnies, a 4-H calf, playing on the high school football team, and being in the band, and our daughters competing with other 4-H'ers in cooking, sewing, homemaking, etc? We are working together, our family has learned to depend upon one another for success in living and for a good harvest. Not one of us, from Dad to little sister Sally, is lacking a job or the feeling that each one is important and necessary to the other, and life is not a big picnic under the apple trees in May (though we do enjoy that too), but real hard work with real good rewards.

This is a long letter, but you shouldn't have asked me what I think about moving to the country or "raising apples." I will write more on that subject later. Right now, some spray material has been delivered and I will have to see that it is properly and safely stored in our store room.

Come out to see us during May. There is nothing so beautiful as 500 apple trees blooming on a Wisconsin hillside. Love to you all.

Yours affectionately,

Leona

No Thought of Bombs "FOR 30 years," writes Marion McConnell of Cornelia, Ga., "I dreamed of the day I would be able to pick fruit from my own trees. Being a poor man and knowing it takes money to establish a commercial orchard, I wanted only a home plantation. At last, in 1946, I managed to become a land-owner. That winter I began to set out fruit trees, and every year since I have added a few. It was like a fever in my blood. I made the mistake of over-planting my home orchard. It's too large; so now I have to struggle to properly care for all the trees. But still I don't mind. It has been a lot of pleasure to me. I have picked fruit of 45 varieties of peaches and over 20 varieties of apples from my trees. For me this has been *fun*, even though the assortment makes spraying difficult.

"When I am out in the orchard, I am able to forget things like war and politics. I never think of hydrogen bombs or taxes when I am with my trees. I feel that the nearer I get to nature, the nearer I am to God."

Mrs. Alice G. Burghart of Affton, Mo. (soon to be of Florida), whose poem "Whispering Orchard" was a feature of the March issue, is a charitable soul. She not only forgives us for misspelling her name but whispers an all-around compliment, "Your column in AMERICAN FRUIT GROWER is like a drop of perfume on a lace hanky!" she says. A true poet!

Address your "Windfalls" contributions to Henry Bailey Stevens, AMERICAN FRUIT GROWER, Willoughby, Ohio.

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K330.....7 to 12 H.P.
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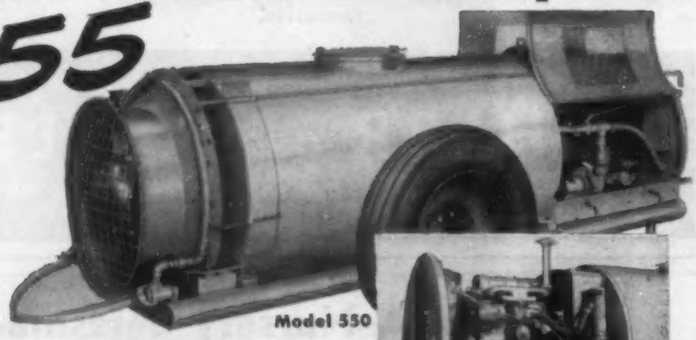

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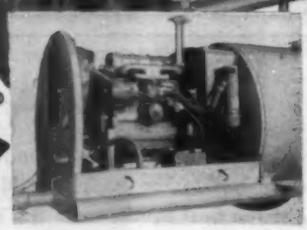

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AVOID A Frost Pocket

Maximum-minimum thermometers help you choose a good site

By W. W. MAGILL
University of Kentucky

ARE you considering planting an apple or peach orchard in the next five years? If so, you want to be sure the location you have in mind is a safe place to raise fruit. You want to be sure that you haven't chosen a frost pocket.

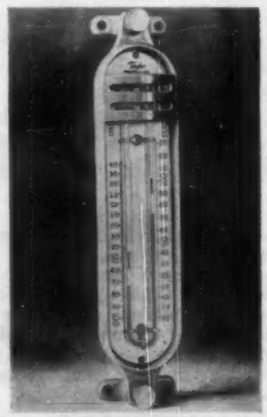
Sheldon Funk, past president of the National Peach Council, said in the feature address at the annual banquest a few years ago, "A dumb man, but willing to learn, when going into the peach growing business will succeed financially if he picks a site that the Lord favors for growing peaches; however, an experienced peach grower who knows all the answers on peach culture will fail financially if he picks a frost pocket for his location."

He continued: "Forty-six years ago I planted my first peach orchard. I had no crop the first two years, but have harvested 43 crops in the past 44 years."

Be Safe, Not Sorry

How can you get the local facts about a certain site being a safe location for growing peaches? Here is my suggestion—spend $20 to purchase two maximum-minimum thermometers. Why buy two? Because you need two—one to hang in your selected orchard site, and one to hang in a *proved orchard site* near-by. The comparison of the two thermometers will be worth a thousand times your $20 investment.

If you do not know how to use your thermometers, just spend 15 minutes reading the instructions that come with them and observe how they work. You will notice that there are



This type of maximum-minimum thermometer is manufactured by The Taylor Instrument Companies, 95 Ames Street, Rochester, N.Y.

two mercury columns on each thermometer. One we will call the "cold" side and the other the "hot" side. Just forget about the "hot" side for the present job.

In addition to the usual mercury column, you will observe a second small column just on top of the regular column. Another part of the standard equipment with this outfit is a small horseshoe magnet, with which you can draw the two mercury columns together. In other words, the top of the regular mercury column reads the same temperature as the bottom of the small column.

It may be that one of your neighbors has a proved site. If so, hang one of the thermometers in one of his trees at, say, shoulder height. Take the other thermometer to your prospective site and hang it in a similar position and height.

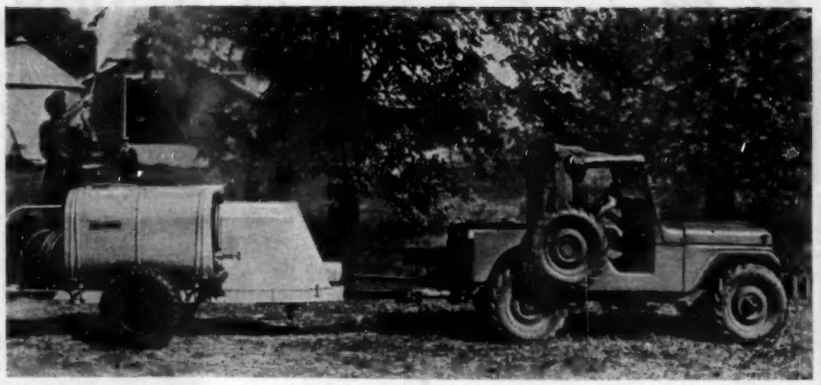
BELIEVE it or not, these are Red Delicious apples. They were deformed by the May 4, 1954 freeze in Missouri. When such injury occurs and the fruit refuses to drop, they create an additional loss to the grower.— *Paul H. Shepard, Director, Missouri Fruit Exp. Sta., Mountain Grove.*

Compare Temperatures

Keep in mind that you want to find out what the "cold" temperature would be some April night when the frost might take your crop, that is, the temperature at your site compared with that at the proved site. For example, if your location proved to be 4° colder, this difference would probably not matter with any crop except fruit. But on an April night, with the orchard in the pink or full-bloom stage, 4° might be the difference between a sure crop or a total failure.

During the past 30 years I have proved to myself just how costly it is to pick a poor site for a peach orchard. I selected my first site by guess, coupled with the advice of friends, and it produced 7 crops in 22 years.

A few years later I picked another site which I tested out carefully with thermometers. It has produced 15 crops in the last 17 years. If you have ever been in the peach producing business, I am sure you understand my language. Of course, if the temperature drops to 11°F. in late March, as it did this year in the South, all the thermometers in existence will not save your crop! THE END



4-wheel drive does another job better!

SPRAYING

The Universal 'Jeep' with power take-off operates almost any kind of spraying or dusting equipment, including the 200-gallon trailer-mounted spray unit shown here. With the extra traction of its 4-wheel drive, it travels soft or muddy hills or rough terrain, and its short turning radius enables it to maneuver easily through the tree rows. Spraying equipment can be detached quickly, freeing the 'Jeep' for transportation, cultivating, and many other uses. Ask your Willys dealer for an on-the-job demonstration, or write for information.

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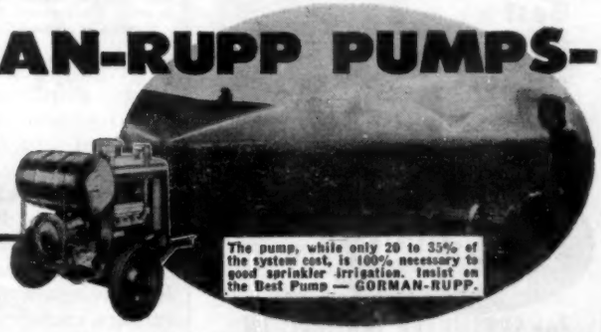

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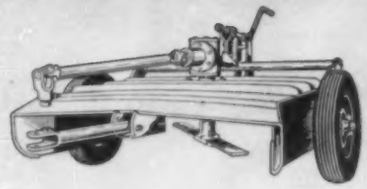

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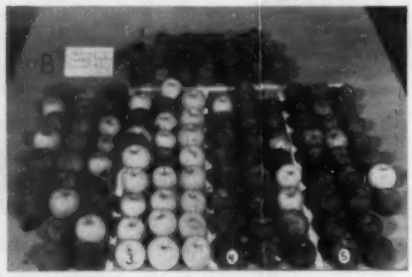
CUT SPOILAGE LOSSES

Captan formulations extend keeping quality and prolong storage life

REPORTS from many sections of the country indicate that apples, peaches, cherries, strawberries, and grapes treated with the fungicide captan during the growing season have more than doubled the post-harvest life of fruits.

Apples—Barden Brothers, in South Haven, Mich., have used a complete captan (Orthocide 50 W) program for the last two years. They report comments from all their buyers on the superior keeping quality of both their apples and peaches. One buyer kept samples of 1953 apples through the summer of 1954 without loss.



In Purdue University tests, captan-sprayed apples (4th, 5th, and 6th rows from left), were only 16 per cent rotted after one month in cold storage and one month at room temperature. Apples in other four groups treated with other fungicides showed from 84 to 100 per cent rot.

Orrin Ensfield, in Fennville, Mich., displayed a half bushel of captan-treated Jonathans that had remained in common storage, through 90° summer heat, for a full year. Most of the apples were somewhat shrunk, but many were still firm and none had rotted.

Peaches—Hurlburt Brothers Co., Inc., Niagara County, New York, canners, report the following test:

One lot of 183 bushels of Elberta peaches, treated with captan throughout the season, and 166 bushels treated with sulfur by "one of our best growers," were picked on September 19 and held in cold storage until October 4, then placed in the ripening shed. One week later when canning was begun, the sulfur-sprayed peaches were so badly infected with brown rot that only 16 bushels were salvaged out of the 166. The captan-treated were run through in 2 hours with less than one bushel of waste other than normal shrinkage.

Cherries—In Pacific Northwest tests on Bing cherries, captan-treated and untreated fruit was packed, stored for 9 days at 40° F., then held at room temperature for 33 hours, and again placed in cold storage for 7 days at 39° F. In the untreated cherries there was 9.33 per cent decay; 1.33 per cent in captan-treated.

Lou Schmall in Wayne County, New York, buys about 5 tons of sweet cherries each season to sell at his fruit stand. He reports that the captan-treated cherries he bought last year held up 10 to 12 days in summer heat—twice as long as they had ever been able to keep cherries before. Blue mold was prevalent in '54, and sulfur-treated cherries, according to Mr. Schmall, developed the disease almost overnight, in decided contrast to the less-than-half-a-basket loss in the 2 tons of captan-treated cherries purchased from the Buerman orchards in the area.

Strawberries—Early tests conducted at Louisiana State College Experiment Station for control of Botrytis Rot of strawberries showed 9.9 per cent rot in the captan-treated plot in contrast to 26.5 per cent rot in the untreated plot. The yield from the captan-treated was 40 per cent higher than the untreated and 26 per cent higher than the best yield of plots treated with othe fungicides.

At the Tregunno Fruit Farms in Ontario, Canada, strawberry storage tests showed approximately 5 per cent rot among captan-treated berries after 6 days at room temperature. Untreated berries were 50 per cent rotted.

In Gasport, N. Y., these Elberta peaches were stored at room temperature for 16 days. At that time, the sulfur and Vapophos-sprayed peaches had 78 per cent Rhizopus and brown rot; Orthocide- and Orthophos-treated fruit had only 22 per cent rot.

Grapes—USDA experiments in the Fresno, Calif., area demonstrated that table grapes field-dusted with captan and fumigated in storage showed just 1/13 as much decay after storage as those that had been fumigated in storage but not field-dusted.

THE END

Captan is prepared in two formulations, ORTHOCIDE 50 W, made by California Spray-Chemical Corp., Richmond, Calif., and STAUFFER CAPTAN, made by Stauffer Chemical Company, 380 Madison Ave., New York 17, N. Y.

STATE NEWS

(*Continued from page* 15)

Glenn Slaybaugh, of Adams County, attributed his large yields to heavier than normal applications of balanced fertilizers, and mulching. If all the trees in an orchard cannot be mulched, at least those on steep sites which may be subject to erosion should be mulched.

Another Adams County grower, **Ryland Garretson,** considers cover crops a good indication of tree needs in his apple and peach orchard. "Whenever cover crops begin to slow down in growth, it's time to fertilize heavier for the tree's sake," he said.

Thomas Oyler, sour cherry grower, told how $14 spent on soil testing saved him $1,000 in fertilizer costs for 1955. He favors heavy pruning of sour cherry trees so that cherries on the inside of the tree can ripen with the rest.

A grower of apples, peaches, plums, and grapes near Wilkes-Barre, **Harold G. Brace** related labor savings made possible by refrigeration. By picking plums, peaches, and grapes at their peak and storing them under refrigeration, he has been able to reduce harvesting cost, spoilage losses, and give the consumer a better product. He sells his produce at retail in a city open market.

Sun ripening of apples after picking to secure additional color was discussed by **Henry Heisey** of S. H. Heisey and Sons, Greencastle. He starts with high-quality apples, picked near the normal ripening date. The apples are then placed on clean wheat straw under the shaded portions of the tree for about 10 days. They then go immediately into storage. Cost of the extra handling is about 15 cents a bushel, but price advantage in selling is about 50 cents a bushel.

(*Continued on page* 35)

NEW APPLE POPULAR

JERSEYRED, the new apple developed at Rutgers University and named at a meeting of the New Jersey Apple Institute last fall, is growing rapidly in popularity among growers, reports Arthur J. Farley, institute secretary. Jerseyred is a late-season apple of exceptionally good quality and flavor for both cooking and eating fresh. It stores well.

Institute officers recently re-elected are: President, Thomas S. DeCou, Haddonfield; vice-president, Carroll W. Barclay, Eatontown, and secretary-treasurer, Mr. Farley, New Brunswick.

DOUBLE BLOSSOM

(Continued from page 15)

berry are apparently immune. The Young dewberry is somewhat less susceptible than other dewberry varieties.

Control. **In areas from North Carolina southward primocanes and fruiting canes of susceptible brambles can be cut off level with the ground immediately after fruiting. New primocanes will form during the summer. These new canes will be entirely free of the disease because no new infections occur after early June. In locations where removal of primocanes after fruiting results in poor new growth, the practice should be followed only every other year.**

In Florida and probably in some other far southern areas, the causal fungus may infect terminal buds of canes that form new plants. If this happens, all buds that form on the new plant will be infected. Such plants are worthless and should be removed from the field.

In regions where there is not sufficient time for new primocanes to develop if the bushes are cut back after harvest, the disease may be controlled by removing and burning infected buds while they are most apparent in early spring.

In Louisiana the disease has been effectively controlled by spraying three times with 4-4-50 Bordeaux mixture at 10-day intervals starting during the first week in May and ending about June 1.—*Austin C. Goheen, USDA.*

4 WAYS BETTER

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FORD TRACTOR
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1 SAVES TIME

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Just nudge the Hydraulic Touch Control lever on the Ford Tractor to raise or lower the cultivator. Clear trash quickly and easily. Adjust working depth while "on the go."

3 POSITIVE CONTROL

The Ford Field Cultivator mulches the topsoil to desired depth and kills weeds. Spring releases permit the cultivator shanks to ride over obstructions and protect the cultivator from rock damage.

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Ford Tractors and Implements are value priced. They not only cost less to buy—they are also economical to operate. Upkeep expenses are low, too.

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Ford Farming

GETS MORE DONE...AT LOWER COST

NEW ENGLISH WALNUT

Advantages of Adams are earlier ripening of large, smooth nuts

A NEW English walnut, discovered on the farm of M. P. Adams and soon to be introduced by Oregon State College, is being greeted enthusiastically by Oregon nut growers.

The new walnut, named the Adams walnut by the college, has these important advantages:

1) Nuts ripen 10 to 12 days before Franquette.

2) Nuts are large and smooth like the Franquettes, and often run a higher percentage of large sizes.

3) Trees appear to be more winter-hardy than Franquettes.

4) Indications are that the Adams walnut may be more blight-resistant than Franquette.

Adams, former manager of the Salem Nut Growers Co-operative, planted the tree, a Manregian, in 1934.

He points out additional advantages of the new walnut. It sheds its crop of nuts before the leaves fall, making for easier harvesting, and it has a much bigger shell-out.

J. J. Gallagher, manager of the Salem Nut Growers Co-operative, wrote the following letter to Adams:

"We have shelled and analyzed the 192 pounds of dry walnuts which you delivered this year from your Adams walnut tree. The in-shell sizes of this lot were as follows: Jumbo, 60 per cent; large, 18 per cent; medium, 15 per cent; baby, 7 per cent.

"These nuts sized considerably larger than this year's Franquettes which ran about 34 per cent large and jumbo combined, as against the 78 per cent in your Adams walnut. The shell-out of your nuts was 46 per cent meats per pound of in-shell nuts."

These nuts were orchard run, and there were no blacks or blanks. The tree was not shaken, and practically the whole crop had dropped in eight days. Other tests are being run in various places on the tree, which will be released in a year or so by the college, which owns the deed to the tree and will control distribution of scions.

At the suggestion of the college, Adams has never sprayed or irrigated the tree, in order that it would be given a real test for hardiness and production. There is no dieback, and two severe frosts in 20 years have done it no damage.

The 82-year-old grower still does most of the pruning himself in his 20-acre orchard near Salem. He helped organize the Salem Nut Growers Association in 1925, and served as manager until 1942. He gained much experience in nut growing as manager of the 220-acre Skyline Orchard near Salem from 1923 to 1933.—*Harold and Lillie Larsen.*

AVOID SOIL COMPACTION

SOIL compaction—the pressing down of earth by equipment—prevents irrigation water from readily entering the soil and cuts down the amount of water the soil can hold. It also discourages full development of vital root systems and keeps essential air from assisting fully in the decay of organic matter, warns William E. Martin, California extension soils specialist. Where compaction has already occurred, Martin recommends the use of manure and cover crops.

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HAS THE FRUIT SET?

WHEN a fruit tree blossom sets as fruit, it signals its success in a way that most fruitmen easily recognize.

As the blossom opens in the spring, the petals and calyx lobes spread wide apart, and as the petals fall the calyx looks star-shaped.

Then those blossoms which will set as fruit begin to grow. In the case of apples and pears, the result is that the calyx lobes begin to close and pinch together again, while those which have not set remain wide apart or even grow curved backwards upon themselves—"reflexed."

In the case of cherries, peaches, plums, and apricots the first sign of set is a tightening of the "shuck" and later a slight crack or separation at the base of the "shuck" as it is being pushed off by the growing fruit.

A good fruitman can catch the earliest signs. A little study will help. Not that it does any good so far as set is concerned, but it helps the anxious grower during this worrisome period—like pacing up and down the corridor of the maternity ward rather than just sitting and fretting!—*H. B. Tukey.*

Three apple blossoms which have set as fruit and three (at top) which have not set.

STATE NEWS

(*Continued from page* 33)

"Palletizing my storage is the greatest labor saver I have installed on my farm in the last 10 years," said **Charles L. Packard,** Blair County grower and immediate past president of the Pennsylvania Horticultural Association. He recently changed from battery-operated to motorized lifts.

Al Lightner, a York County grower who operates a large roadside retail business, attributed his success to honest dealings. "Don't ever try to cheat, it just doesn't pay," he said.

The use of ladino clover as a cover crop was discussed by **Nelson Weber,** Adams County. It is an excellent source of free nitrogen, but is very attractive to mice, and increases the problem of mouse control.

Carl S. Bittner, fruit specialist at Pennsylvania State University, was moderator of the discussion.

Expect Quality Crop

MARYLAND—Growers are planning on producing a real quality crop this year. They are taking no chances on neglecting any essential orchard operations, but also are taking no chances on risky things. Some growers were thinking of trying out chemical thinning on peaches but have decided, in view of the freeze damage to peaches in the South, that their peaches will be hand-thinned and clubbed off, and that the thinning job will not be neglected nor overdone.—*A. F. Vierheller, Sec'y, College Park.*

Excellent Crop Prospects

NEW JERSEY (Apr. 5)—Apple, peach, and blueberry crop prospects are excellent. —*Ernest G. Christ, Sec'y, New Brunswick.*

Apple Dessert Contest

WISCONSIN—The very successful Apple Dessert Demonstration Contest conducted by the Wisconsin Apple Institute in 1954 will be continued and expanded this year. Winners will demonstrate the making of various apple dishes over TV stations throughout the state.

Wisconsin Apple Institute elected Joe Writt of Roen Orchards, Ellison Bay, president; Robert Sacia of Sacia Orchards, Galesville, vice-president; and Frederic Meyer of Waldo Orchards, Waldo, secretary-treasurer. H. J. Rahmlow, Madison, continues as executive secretary. Harold Schubert of Gays Mills was elected delegate to the National Apple Institute convention, with Henry Mahr of Milwaukee, past president of the institute, as alternate.

Wisconsin apple growers are optimistic about fruit crop prospects.—*H. J. Rahmlow, Sec'y, Madison.*

Tree Growth Advanced

MICHIGAN—Cooler weather—but temperatures no lower than 35° F.—is the hope of the Michigan fruit grower, as of April 15. The warm spring weather has advanced growth of both trees and small fruits 10 to 12 days ahead of normal, recalling the below-freezing temperatures experienced during the first week of May, 1954, when growth was also about 10 days ahead of normal.

Even with the heavy loss of flower buds, 1954 was a good fruit year generally.

The 1954 apple crop was almost normal due to the heavy crop of Northern Spy, which escaped the May freeze because of later development. However, if there should be a repetition of last year's freeze, the Northern Spy would not carry the load, since it is generally an alternate bearer.

On the brighter side, many growers related experiences where more than 90 per cent of the flower buds and small developing fruit were killed by the cold weather prior to and after blossoming, but with good pollination during full bloom, the trees produced good crops. We are hoping for a favorable fruit year.—*Arthur E. Mitchell, Sec'y, East Lansing.*

Fruit growers in Ashtabula, Lake, and Geauga counties in northeastern Ohio may be organized in a single tri-county society. Plans for its organization were laid last month at a meeting of representatives of the fruit committees from each county.

A committee was appointed to work out details of a three-county fruit tour scheduled for August 4, and a horticultural banquet to be held around the middle of November.

David Dean, president of the Ashtabula Horticultural Society, was named chairman of the steering committee. Other members are Penrose Burkholder and Richard Brunaman, Ashtabula County; Richard West, Charles Poulson, and David Dugan, Lake County; and Sam Patterson, Lyle Battles, and Tom White, Geauga County. —*F. G. Haskins, Lake County Agr. Agent, Painesville.*

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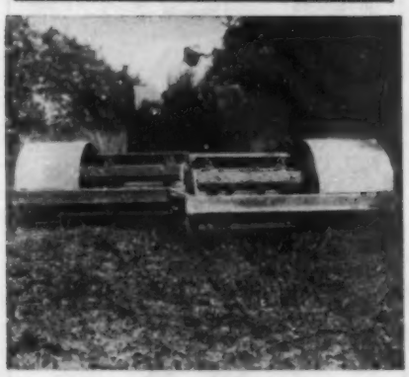

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THE BIG FREEZE

(*Continued from page* 14)

North Carolina the replacement of many orchards will be necessary, reports T. T. Hatton, extension horticulturist. Considerable terminal wood injury occurred to apple trees in Henderson County, the largest apple producing county in North Carolina, also trunk injury at lower elevations.

Injury to peach trees is "quite rough" in the case of many one and 2-year-old trees, reports Ray Klackle, secretary, Indiana Horticultural Society. Apple orchards in the Calhoun County area are reported to have been seriously hurt, with various amounts of damage according to location, reports Harold J. Hartley, secretary, Illinois State Horticultural Society.

"After-Freeze" Recommendations

The general recommendation for care of freeze-damaged trees is that growers give them a chance to recover before doing any further pruning or fertilizing.

In Georgia, as in most peach orchards, spring fertilizer had already been applied when the freeze occurred. Nitrogen fertilizers should be used only after such time as tree recovery is apparent, states "Rip" Savage. Only one spray probably will be needed in July for control of Oriental fruit moth, scale, and borers. The usual three trunk sprays will be needed for borer control starting in August. Sufficient cultivation should be given orchards to keep down weeds and facilitate the run-in of water into the soil.

In the Sandhills area of North Carolina Mr. Hatton suggests that the amount and character of shoot growth and foliage color should determine whether an application of fertilizer should be made in late June on injured trees of all ages. No spraying is recommended except for borers on July 1, August 1, and September 1. On the heavier soils in the Piedmont area the recommendation is to use about half of the usual amount of fertilizer if no application was previously made.

Hatton recommends that nonbearing apple trees be fertilized as usual. Phosphorus and potash may be cut in half on bearing trees. Nitrogen applications should be related to adequate terminal growth and good foliage color. Terminal growth on young trees should be about 12 to 18 inches and on bearing trees 6 to 12 inches.

Since it is indicated that aphids may have had a rough time in North Carolina during the cold wave, no spraying is necessary.

In Louisiana, the outlook does not justify continuing a spray or dust program, states P. L. Hawthorne, associate horticulturist at University Station. Where fertilizer was not applied, growers should use the equivalent of not less than 400 pounds of a 6-8-8 analysis. Additional nitrogen may be applied in June if the tree shows the need.

In Illinois a minimum program of fertilization and pruning is suggested by Hartley, with perhaps a supplementary fertilization of trees which appear to have been damaged or were still showing the effects of the 1951 freeze. A moderate to mild program of spraying is recommended to prevent apple scab infection and to control scale on peach trees and mites and aphids on apples. A mild fungicide and eradicant for control of scab infection to prevent the defoliation of apple trees during the year is also recommended.

If enough live peach buds are left to make a crop worth saving, Ray Klackle advises Indiana growers to do very little pruning. If not already applied, fertilizer should be used to keep up tree vigor and mature the crop.

Where the peach crop is completely gone, Klackle suggests pruning rather heavily. This is a good time, he states, to bring down tree height and renew fruiting wood. Where fertilizer is already applied and there is danger of excessive growth, growers should let the cover crop grow in order to take up the moisture and fertilizer. Where no fertilizer was added, Klackle suggests that none be added now. No spraying will be necessary except to control peach borers.

Scab-susceptible apple varieties should receive a minimum fungicide spray schedule, states Klackle, for a serious infection this year can hurt next year's crop. If DDT is omitted, natural enemies will probably keep mite population under control. Where live buds indicate a crop worth saving, a mild fungicide spray program is suggested. Klackle says the addition of foliar nitrogen may help bud set of live flower buds.

While growers must judge the condition of their own trees and decide as to their needs, it is recommended that they keep in close touch with their experiment station and extension worker and their county agent. Growers located in the 10 southeastern states in which emergency loans have been made available by the USDA Farmers Home Administration should also keep in close touch with their local F.H.A. office. And as T. T. Hatton urgently advises growers, "Keep your chin up."

THE END

THE KERNEL Told the Tale

1954 May freeze caused unusual injury to peaches in Missouri

THREE hours of freezing weather (29° F.) on the night of May 4 last year injured many fruits at the Fruit Experiment Station at Mountain Grove, Mo. Not all fruits showed injury; some showed more than others. Our peaches were from ½ to ¾ inch in diameter, and we found that the larger peaches sustained less injury than the smaller ones, presumably because more heat was stored inside them.

Effect on Kernel

A few days after the freeze we noted many variations in the degree of injury. We were particularly interested in the seed or kernel inside the stone. At that stage of growth a normal pit is soft and the jelly-like seed mass in an uninjured stone is clear and bright, and the husk or skin covering the kernel is white.

We found that if the jelly mass or kernel was discolored in any way the peach died and dropped off. In almost all cases we found the kernel was white and bright, but the membranous seed coat had turned brown.

In all cases where the husk only had turned brown the embryo aborted and no kernel developed. However, the fruit grew and matured to almost normal size and shape. Evidently at that stage of the fruit's growth the peach had no great need of the embryo development. Any young stone showing a white husk or inner skin, covering a white kernel, developed a normal peach, pit, and embryo.

At harvest time 1,848 peach pits from normal-looking peaches were examined. Pits were obtained from the following varieties: Elberta, Golden Jubilee, Summercrest, Newday, Redhaven, Hale Haven, Burbank July Elberta, and Nectar. Only 8 had normal kernels; 1,840 had shriveled, dried-up kernels or no kernel at all. Many pits had developed so that there was no room for a kernel. Yield was about normal, averaging slightly less than 4 bushels to the tree.

Effect on Skim

The freeze affected the skin on a few varieties, particularly Redhaven. Two weeks after the freeze, practically all peaches on the trees had small cracks, resembling thumbnail or curculio punctures. On another variety a large crack developed near harvesttime which was not caused by rain, as there was none.

We believe all the peaches developed a slightly greater point, and were somewhat smaller than usual. However, the smaller size might have been the result of a very dry season.

What impressed us was the ability of the peach to apparently develop normally to maturity, without a live embryo in the seed. In the apple we know it is customary for the fruit to drop off unless there are at least three live seeds in each apple.—*Paul H. Shepard, Director, Missouri Fruit Exp. Sta., Mountain Grove.*

CRITICAL TEMPERATURES FOR FRUIT BUDS

FRUIT buds as they develop become more susceptible to cold. Critical temperatures for the various stages of fruit bud growth have been worked out by the Yakima County Extension Service as a guide for growers in the Yakima Valley of Washington in heating their orchards. The critical temperatures listed below are averages. If prebloom bud development is slow, they suggest subtracting a degree or two, and if buds are moving fast, a degree or two should be added.

	Green tips[1]	Delayed dormant[2]	Pre pink[3]	Showing color[4]	Full bloom	Small green fruits
	Degrees					
Delicious	16	22	26	28	29	29
Winesap	15	21	25	26	28	29
Golden Delicious	15	21	24	26	28	29
Rome Beauty	14	20	23	24	27	29
Pears (all)	18	23	24	28	29	30
Cherries	21	25	28	29	29	30
Italian Prunes				23	27	30
Plums						30

	Swollen bud	Showing color	Full bloom	Green fruits
Apricots	23	25	28	31
Peaches	23	25	27	30

[1]GREEN TIP STAGE: Bud scales separating, small green tip showing on apples. Pears and cherries inner bud scales showing at tip.
[2]DELAYED DORMANT: Bud scales widely separated but still attached. Squirrel ear leaves on apples showing. Pear and cherry blossom buds exposed.
[3]PREPINK: Buds widely separated. Flower parts show no color. Flower cluster still stuck together.
[4]SHOWING COLOR: All buds showing color and separated in cluster. Primary leaves fairly well developed on apples.

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CHERRIES IN WATER

(*Continued from page* 11)

Before the trucks were dispatched to processing plants enough additional water was circulated through the load to lower the temperature of the fruit to 60° or below. Upon arrival there the fruit was flumed out of the trucks and processed in the usual way.

The detailed records that were kept showed that this method of transport:

1) Helped maintain on-the-tree quality.
2) Reduced costs.
3) Facilitated handling.
4) Reduced the number of lugs required.

While these benefits were significant, the results indicated that additional advantages could be realized if the cherries were put into water at the orchard immediately after being picked, rather than later at the receiving station.

During the 1954 season 152 tons of cherries were handled in water directly from the orchard to the processing plant without the use of a single lug.

In this method of handling, the cherries were picked in 10-quart pails. The filled pails were checked-in at an assembly point in the picking area and then loaded onto an orchard trailer and moved to a nearby loading dock.

Upon arrival at the dock the fruit was poured onto a sorting table, set up in such a way that the cherries moved across it directly into cold water contained in a tank truck.

When the truck had been filled to capacity with fruit and the contents cooled (by running water) to a temperature of 60° or less, the "tanker" was dispatched to the processing plant. Upon arrival there the fruit was flumed out into a "receiving boot" and then handled in the usual way.

All the work of unloading was performed by the truck driver. All that was necessary was to attach the flume, open the outlet valve and turn on the hose which supplied the additional water necessary to flume out the fruit.

Advantages of Method

Quality Was Maintained. Pouring the cherries from the picker's pail into cold water meant that practically all the fruit was cooled in less than an hour after being removed from the tree. The sorting table used in filling the tanks provided a practical means of removing defective fruit. The combination of orchard sorting, quick cooling, and water handling proved to be an excellent means of maintaining on-the-tree quality.

Lugs Were Eliminated. Pouring the cherries directly from the picker's pail onto a sorting table and then into tanks made the use of lugs unnecessary.

Costs Were Reduced. Water transportation reduced the handling costs of both grower and processor.

Management Was Simplified. When cherries are moved in water many troublesome lug storage, maintenance, distribution, and accounting problems are eliminated.

Cherries being flumed out of tank truck at processing plant. All unloading was done by driver.

The new system of handling benefits grower, processor, and consumer. If it comes into widespread use, everyone concerned should benefit, and cherry pie will taste just a little better. THE END

BUD DEVELOPMENT

BACK in 1913 Harold Titus, Montmorency sour cherry grower, started keeping a record of bud development in his orchard located in Peninsula Township, Michigan.

The record, now in its 42nd year, shows that the earliest date on which the buds showed green was March 20; the latest, May 12. The earliest date of full bloom was April 13; the latest, June 2.

Record of Montmorency Bud Development Titus Orchards, Peninsula Township, Michigan

Year	Showed Green	Full Bloom	Year	Showed Green	Full Bloom
1913	Apr. 22	May 4	1934	May 1	May 17
1914	Apr. 18	May 10	1935	Apr. 16	May 28
1915	Apr. 18	May 9	1936	Apr. 26	May 10
1916	Apr. 23	May 25	1937	Apr. 3	May 22
1917	Apr. 21	May 20	1938	Mar. 20	May 2
1918	Apr. 25	.....	1939	Apr. 22	May 12
1919	Apr. 8	May 25	1940	Apr. 19	May 26
1920	May 12	May 27	1941	Apr. 14	May 11
1921	Apr. 26	May 10	1942	Apr. 15	May 30
1922	Apr. 11	May 10	1943	Apr. 25	May 24
1923	Apr. 13	May 9	1944	Apr. 26	May 16
1924	Apr. 27	June 2	1945	Mar. 27	Apr. 13
1925	Apr. 21	May 21	1946	Mar. 27	May 12
1926	May 8	May 29	1947	Apr. 24	May 27
1927	Apr. 10	May 15	1948	Apr. 14	May 19
1928	May 2	May 23	1949	Apr. 13	May 6
1929	Apr. 6	May 5	1950	Apr. 25	May 27
1930	Apr. 6	May 9	1951	Apr. 11	May 17
1931	Apr. 14	May 5	1952	Apr. 16	May 10
1932	Apr. 20	.....	1953	Apr. 9	May 18
1933	.....	.....	1954	Apr. 14	May 24

Observe the rule

An Ounce of Prevention

when using the new insecticides

By WILLIAM M. UPHOLT
U. S. Public Health Service
Wenatchee, Wash.

THE newer insecticides have been a great boon to the production of more and better fruit. But there are hazards that accompany the use of such materials, particularly when they are misused. Each year there are several deaths from insecticides, especially the newer organic phosphorus compounds such as parathion and tetraethyl pyrophosphate (TEPP). These deaths are usually the result of carelessness or accident.

The first requirement in the safe use of insecticides is that they be stored under lock and key. They must be kept away from children. Empty containers must be promptly and effectively destroyed or locked up. Several deaths have resulted from children playing with "empty" insecticide containers.

Insecticides are not equally dangerous, though all are capable of seriously damaging man, if mishandled. Generally speaking, the organic phosphorus compounds are more dangerous than DDT and its relatives, but this is not always true. Some of the newer non-phosphorous materials are potentially very dangerous, whereas the evidence at present is that some of the organic phosphorus compounds such as malathion or chlorthion may be no more dangerous than DDT.

Many of the older insecticides such as nicotine, hydrogen cyanide, and the arsenicals are as dangerous as some of the newer ones, and if less is said about them it is largely because these materials are not now so widely used. In all cases of doubt it is better to be too careful than not careful enough.

The most dangerous of the organic phosphorus compounds in general use include TEPP, parathion, and demeton (trade name, Systox). These materials and others like them are effective against insects and poisonous to man and animals because they inactivate an enzyme known as cholinesterase. This enzyme has an important function in the nervous system at many locations in the body, including those which control breathing and heart beat. It is normally present in the body in such excess quantity that the body can function normally even in the face of appreciable cholinesterase destruction.

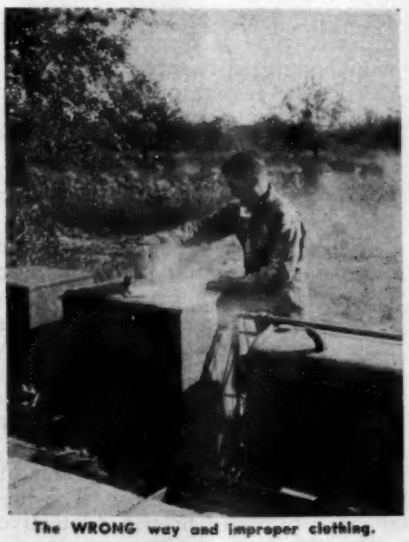
Blood Test

There may be no warning symptoms of poisoning until after a critical amount of the enzyme has been destroyed. The determination of cholinesterase activity by a blood sample is a good test of serious exposure to these insecticides even in the absence of symptoms.

Routine cholinesterase determination is a good method of checking

(*Continued on page* 40)

The RIGHT way and the proper clothing.



The WRONG way and improper clothing.

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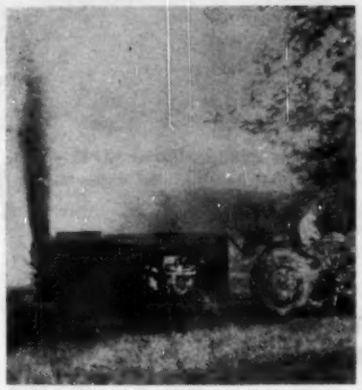

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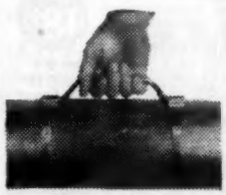

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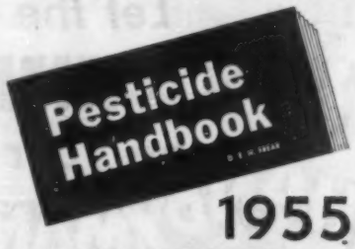

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AN OUNCE OF PREVENTION

(*Continued from page* 39)

the adequacy of safety precautions. If such routine tests show a gradual reduction in cholinesterase activity, it is a good indication that something is wrong and the manager or other responsible individual should immediately find the source of exposure and eliminate it.

Normal cholinesterase values vary widely among individuals. For this reason it is very desirable for anyone anticipating exposure to these insecticides to have his own normal cholinesterase values determined before exposure.

If an individual is poisoned to such an extent that symptoms develop and the cause is confirmed by a blood test, he should avoid any further exposure until another blood test shows that his cholinesterase has returned to nearly his own normal value. Once the cholinesterase activity has returned to normal (within 4 to 6 weeks), the patient has completely recovered and thereafter is no more susceptible than before his first exposure.

Protective Measures

Considerable evidence obtained under actual conditions of use indicates that skin exposure is more hazardous to the operator than exposure by other routes. It is true that dusts or fumes will be very rapidly absorbed if inhaled. Dusts, including the dust cloud that may rise when dumping a wettable powder into a spray tank, are apt to be quite dangerous. The newer "antidusting" wettable powders greatly reduce the danger of inhaling serious amounts of such materials while loading spray tanks, but they do not eliminate the danger.

If parathion or TEPP is to be applied as a dust, a respirator of a type approved by the USDA should be worn. Each of them requires a different type of respirator at present, though efforts are underway to develop a respirator that will be effective against both parathion and TEPP. In either case the filters and cartridges must be replaced regularly according to the schedule suggested by the manufacturers.

While spraying with a large volume sprayer (500 gallon or more per acre) a worker receives much more of the spray material on his skin than through his nose. A sprayman wearing a shirt with short sleeves and an open neck can get a dangerous amount of parathion or similar materials on his hands, arms, face, and neck during the course of an 8-hour day. Therefore, it is important to wear proper protective clothing during spraying operations. Waterproof clothing should be considered mandatory, as should a bath at the close of each day's work, and a clean change of clothing every day.

All users of insecticides should wash carefully and thoroughly before eating, drinking, or smoking since insecticide that is swallowed acts very rapidly. Death has occurred almost instantaneously after a small amount of TEPP or parathion was swallowed.

A similar amount on the skin might also be fatal eventually if allowed to remain but the slower penetration rate allows some opportunity to wash off the insecticide and to get to a physician for treatment. Always wash off immediately any material spilled on the skin!

Symptoms

The early symptoms of poisoning by organic phosphorus compounds are giddiness, headaches, nausea, vomiting, excessive sweating, and tightness of the chest. Not all of these symptoms may be present, but two or more of them should be considered cause for concern, particularly if coupled with known recent exposure.

These symptoms may be followed or accompanied by blurring of vision, diarrhea, excessive salivation, watering of the eyes, and twitching of muscles. By the time any of these latter symptoms appear, the situation is likely to be critical and to justify emergency measures.

Late signs are rattling in the chest, foaming at mouth, convulsions, coma, loss of urinary and bowel control, and respiratory failure.

A supply of 1/150 grain atropine sulfate tablets should be available for emergency use. These can be obtained only by prescription. The physician issuing the prescription should be reasonably familiar with treatment of such poisoning cases and should be contacted promptly if any atropine is taken. Atropine should never be taken until after symptoms of poisoning appear.

Persons developing the more severe symptoms of poisoning should be taken to a physician or medical facility immediately. As implied above, respiratory failure is apt to be the direct cause of death. Therefore, the patient should be watched carefully, and if breathing stops or if he turns blue, artificial respiration should be administered at once. Even if artificial respiration should delay arrival at the doctor's office or hospital, it is more important that respiration be maintained. THE END

Narrow angles and upright growth result when no growth is allowed on trunk between scaffolds.

A spreading tree results when interscaffold growth is retained but cut back each winter.

TRAINING DELICIOUS

(*Continued from page* 12)

have been formed. We have trained over 400 trees by the trunk renewal system in Idaho and have had nothing but completely satisfactory results. The trees are just as large by the time they reach bearing age as trees trained by other systems, and they have much better form.

In all three of the systems above, select 5 scaffold branches spaced about 5 to 9 inches apart. The top branch is only temporary. It serves to keep the fourth scaffold (the one just below it) growing outward instead of upward. The temporary branch is pruned severely every winter to keep it from outgrowing the others, and it is removed when the scaffold limb below it is 3 or 4 years old.

If you use any of the three systems above you should have well-formed trees by the end of the first or second growing season. Each tree should have 4 permanent scaffold branches and a temporary fifth one at the top. The crotch angles should all be wide.

Retain Interscaffold Growth

But even with this good start you are not assured of having a strong, well-formed Delicious tree by the time it reaches bearing age. We have found that the scaffold limbs of these trees turn upward and inward year by year. Part of this comes from narrowing of the crotch angles as the tree grows older, but most of it is caused by upward bending of the branch a short distance from the trunk.

A a result, a tree may be upright, narrow, and crowded in the center by the time it reaches bearing age, even though it started out with wide angles. What we want is a tree that is open and spreading. This also can be accomplished by a new system of pruning.

The secret in keeping the crotches wide and the branches spreading lies in preserving the growth that comes on the trunk *between* the scaffold limbs. This is the growth that you should have been cutting back severely the first and second years when you were developing the framework of the tree.

We have made a mistake in the past in stripping off all this growth, with the idea that we would direct all the strength of the tree into the permanent branches. By leaving this "interscaffold" growth, but cutting it back severely every winter, we have been able to increase the spread of the scaffold branches by as much as 86 per cent. Cut the interscaffold branches back each winter at least half their length, and never leave them longer than 20 to 24 inches after pruning.

Trees with the interscaffold growth repressed have been just as large and have borne just as heavy crops as those in which the interscaffold growth was removed. By the time the trees have borne one or two crops the interscaffold growth may be taken out. The End

The new methods of training described in the accompanying article are not generally recommended as yet for varieties other than Delicious. Dr. Verner states: "In our experiments we have found that other varieties of apples, as well as sweet cherries, pears, and plums, are affected in their branching habits by plant hormones in the same way as Delicious apple trees. Whether they will respond the same to the new training methods is another question. The Delicious apple has long been our 'problem child' in training, and our experiments have been concentrated on that variety. —Ed.

The

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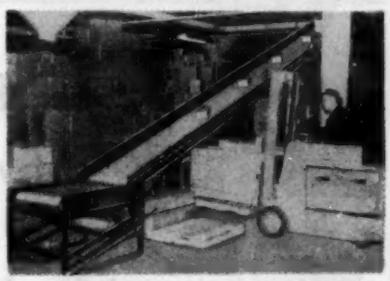

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Willoughby, Ohio

Advertisement

From where I sit ... *by* Joe Marsh

Red Finds a "Sweet Solution"

Red Jackson found a slick way to get his cows to eat what's good for them. Seems they were passing up the tall green grass—full of minerals and vitamins — and eating the short grass, which is naturally sweeter.

Red solved the problem by spraying a solution of corn syrup over the grass that was going begging. The cows sure went at it. Red says it's lucky for him—*and* the cows—that every one of them has a "sweet tooth."

Next week, according to Red, he's going to have his cows clean up all the weedy grass along his fences—after he sprays them with more corn syrup, of course.

From where I sit, some folks, like Red, are always trying out new tricks—and others stick with the old tried and true methods. Just a question of preference, I guess. Like the way you may enjoy coffee with meals, while I prefer a cold glass of beer. So let's not allow any bad feelings to "crop up" by thinking ours is the only choice.

Joe Marsh

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NEW FOR YOU

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Many growers in the Middle West are reporting exceptional results with Clinton engines. Upkeep, starting, and original cost have made these little labor-savers popular with growers. If you are buying a new implement, garden tractor or rototiller, it might be wise to be sure it is equipped with a Clinton. Clinton power plants are also engineered to fit your present equipment. The Clinton chain saw and outboard motors are proving equally successful. Why not write to Clinton Machine Co., 85a, Maquoketa, Iowa, for full information.

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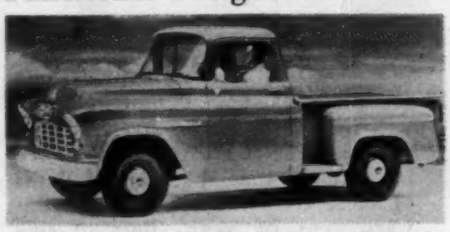
Functional Design

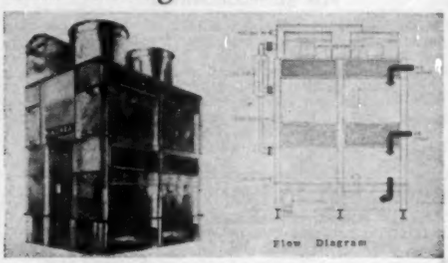


The new trucks look as good as the new automobiles. Outstanding trucks for 1955 are the new Chevrolets. The new line was built after talking with hundreds of growers and incorporating the features most wanted. The 1955 line is more compact—shorter wheelbases, yet increased load space. Cab heights have been similarly reduced, making the new Chevrolets more usable in the orchard. Increased power and greater visibility make the new line one you'll want

- **1955 MODEL TRUCKS**
- **POCKET MICROSCOPES**

to know about. A brochure on the Chevrolet line for 1955 can be yours by writing Charles French, Chevrolet Motor Div., General Motors Corp., A-227, General Motors Bldg., Detroit 2, Mich.

Cold Storage Giant



A well-known grower in western New York has just completed his cold storage. A trip through his building was time well spent. Perhaps his most dramatic piece of equipment was a 200-tons-refrigeration capacity condenser. Extremely efficient to operate, it is equipped with a precooling coil. The unit is very compact, measuring 8½ x 14 x 16 feet high. If you are thinking of building a storage or replacing your present equipment, be sure to write Ralph Knight at Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y.

Handy Pocket Microscope

Many thousands of dollars can be saved by growers if they know when and what spray material to apply. To do this job properly, it is essential that the insect or fungus causing the damage be identified beyond a shadow of a doubt. One of the cheapest investments to guarantee this is a pocket microscope. Several growers at the winter horticultural shows told us they use them. They cost $3.50 for the 20 power glass and $4.50 for the 40 power microscope. Why not write James Van Kleeck, 1242 Webb Road-7, Cleveland 7, Ohio.

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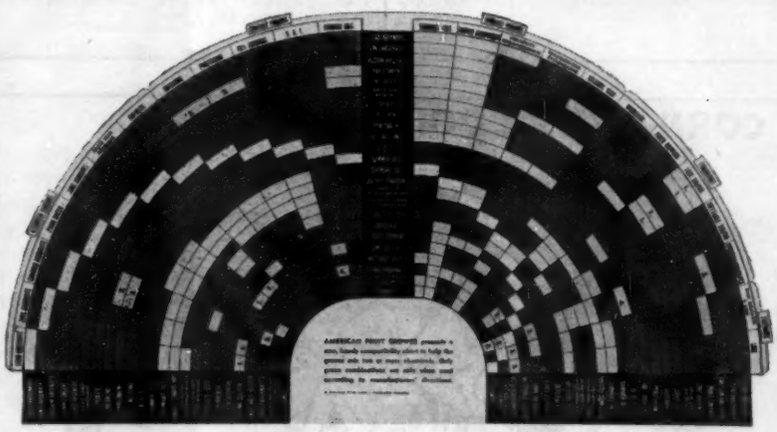

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An advertisement of B. F. Goodrich—First in Rubber

A New Approach to THE BIRD PROBLEM

Broadcasting their distress call will frighten away roosting starlings

By HUBERT FRINGS
The Pennsylvania State University

TO fruit growers, robins and starlings are feathered sinners when they decide to eat ripening fruits. Starlings also make themselves pests by roosting in trees or on buildings in towns.

The seriousness of this problem led us to study the habits of starlings, hoping to find some way to drive them from their roosts. We needed starlings for laboratory work, and Joseph Jumber, a graduate student who was studying the birds, collected them in barns where they roosted during the winter. While doing this he found that starlings held by the legs or wings screamed as if being murdered. This scream made other starlings in the barn leave and stay away.

Sound truck ready to go after starlings. From left: Joseph Jumber, H. Frings, Mrs. Mable Frings. Mrs. Frings is running tape with recorded starling cries. Jumber is adjusting speakers. Amplifier shows behind Frings.

We thought that this "distress call" might drive starlings out of other places, and so we tape-recorded it. In the summer we played it back to birds trying to roost in trees, with startling results. The birds left, after being offered this program for a few evenings, and they stayed away.

Starlings "Take Off"

Flushed with victory, we decided to try this on a larger scale and enlisted the aid of Mrs. Frings, who studies reactions of mice and insects to sounds. Using sound trucks, we attacked the birds in two Pennsylvania towns: Millheim (starling pop. about 12,000) and State College (about 20,000 starlings). The birds were routed in early September, after three or four nights of treatment in each town, and they stayed away until their fall migration, about October 20. These towns are usually infested until then.

This was not as easy as it sounds. We drew heavily on Jumber's excellent study of the birds' habits. He found, for instance, that the appearance of starlings at a roost and their pattern of settling could be predicted by using a light meter. From this, we knew just when to hit them with the sound.

The treatments were not continuous. We used the sound to keep the starlings from settling, if possible. As soon as they tried, we turned it on. When they left, it was off. And it was loud! The rascals didn't have to strain their ears to be convinced that a fellow-traveler was in trouble.

OK for Orchard?

Would this work in an orchard? Frankly, we don't know. The birds we moved were merely forced to sleep somewhere else for a few nights and, through habit, stayed away. Feeding birds would have to be continuously kept out. If many people used this method, the birds would have to eat something other than fruit or starve. Would they die before swallowing their fears?

Blanketing an orchard with sound might be expensive. We used a tape recorder, amplifier, and loud speakers. Luckily the starlings are not high fidelity fans. One can use ordinary sound equipment, but the sound must be loud enough to carry for some distance.

One thing emerges clearly. We need much more study on habits of pest birds, so that we can set up and evaluate experiments in orchards. Having tasted a little success, we know only too well how much more knowledge we need. THE END

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American Fruit Grower

RICHARD T. MEISTER, *Editor*
H. B. TUKEY, *Associate Editor*

• *Fruit for Health* •

Solace to Those Without a Crop

EACH spring finds economic heartaches in this or that area of fruit production in America, brought on by the severities of a hard winter, the ravages of a spring frost, or some wild foray of Mother Nature. The season of 1955 is no exception, with the low temperatures of late March sweeping through the southeastern part of the country to devastate the peach crop and cause millions of dollars of damage in other crops.

No one feels very happy about such adversity. It very often deals with friends and acquaintances toward whom no one wishes ill. On the other side of the scale, there would not be a vigorous, profitable fruit industry if there were no checks and balances to keep the industry within bounds. Mother Nature may be rough in her assignments, yet most folks would prefer to have her exercise the controls than to have it done by some bureaucratic group in government.

Yes, these catastrophes do have a place in the scheme of things as we now live and operate. If peaches could be grown everywhere in the country, peaches would not be worth much. As many a grower knows, the unprofitable years are those of large crops. Or, to put it as one grower does, "I have never lost money in a light crop year."

When everything is favorable, and prices are good, the tendency is for an industry to expand. New grape plantings move outward from the protection of the lake, further and further out into marginal locations. The cherries that like the high altitude find themselves surrounded by newer orchards that sweep down into the lowlands where frost is a hazard. And so it goes in all crops.

Then comes Mother Nature, to chastise the wayward and put the orchards and vineyards back in the favored locations where they belong.

It is hard on the marginal producer, and it is hard on the established orchardist who must suffer along with the rest. But in the long run, everybody is better off.

The Chinese say that floods and pestilence are a good thing—for those who *survive*. This is a harsh way to state the problem, but there is some truth to the parallel.

At all events, to those who have suffered in 1955, may we offer a bit of solace. A fruit grower is an eternal optimist. He has experienced many hardships and survived. And he has had some very good company in the misfortunes that have from time to time overtaken him.

A New Era in Tree Feeding

"HOW should I fertilize my trees?" asks a grower friend. Not long ago it was possible to advise standard formulas. Now, with new information on fertilizer needs of trees, we are reaching a point where each tree is a case in itself.

Leaf analysis, for example, is becoming an important tool in learning what foods the tree needs.

Just knowing what nutrients are in the leaf, however, is not of much value unless we know how much of each should be present for best growth and production. This means setting up standards and taking innumerable leaf samples to find the range in which nutrients are present. This work is complicated by the fact that the supply of nutrients in the leaves varies depending on time of year. On Florida citrus, the best concentration of 15 mineral elements in leaves at five different stages of maturity already has been established on a tentative basis.

It won't be too long before orchard fertilization practices will be tailored to fit particular wants of trees. When this happens, it will be possible to avoid over-application which is costly, or under-application which fails to give the desired results.

Fruit Growing is Such Fun!

Fruit Talk

In central **Iran**, large **pigeon houses** have been maintained for well over 500 years for the purpose of securing **guano** for **soil improvement.** Several thousand houses are in operation, which average as much as three metric tons of guano per year. Because of this relation to soil fertility the pigeon is more or less sacred.

Apricots are highly regarded by **baby food manufacturers** because of the high content of **vitamin A.**

At least 50 years ago it was known that the cathode ray could destroy bacteria. This is now what is called **"irradiation"** or **"cold sterilization."** Radiation source is now available cheaply from atomic energy piles as waste materials.

Traditional methods of long-time **food preservation** are not likely to be immediately displaced by cold sterilization since irradiation reduces vitamins and produces changes in flavor. But **surface sterilization** may find a useful application sooner than we know.

Development in **TOFC** (trailer-on-flatcar) service are being watched closely as a means of providing **faster service** and **lower costs** in the **marketing** of farm products.

The **ice cream industry** purchased 70 per cent of its fruits and berries in frozen form in 1953; the **preserve industry,** 49 per cent; and the **pie bakers,** 42 per cent.

Where have we heard this before?

"In grading and in packing, in colour and in size,
Competition from abroad is pretty hot;
But if it should be flavour you particularly prize,
Then the English home-grown apple beats the lot."

And in conclusion says the correspondent: "We bought some Canadian apples over the weekend. Frankly we find English turnips more pleasant."

Only **10 per cent** of **frozen fruits** appear in **retail size containers** (16 ounces or less) while 90 per cent appear in larger institutional sizes (2 pounds and over). On the other hand, the **vegetable crop** is **42 per cent** in **retail size** frozen packages and 58 per cent institutional.

Writing in **Atlantic Monthly** just 75 years ago H. W. S. Cleveland wrote prophetically about the **Grand Traverse region** of Michigan and said in part, "The advantages it offers (for horticultural purposes) must lead at no distant day to its occupation by the great army whose march is ever toward the setting sun."

The **Bartlett pear** is self-fruitful in solid blocks of many California orchards, 75 to 85 per cent of the crop being parthenocarpic (seedless) according to **Griggs** and **Iwakiri.** However, in unfavorable seasons, the set is improved by **bees** and proper pollinating varieties.

—*H.B.T.*

Coming Next Month

Irrigation Issue

featuring

- How much Water Does a Fruit Tree Need?
- How to Tell When to Irrigate
- Irrigation Saved My Crop
- Mistakes to Avoid When Irrigating Berries

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Ovotran Wettable helps your spraying program "bear fruit" by preventing mite build-up

DOW MITICIDE IS EFFECTIVE AGAINST A WIDE VARIETY OF MITE SPECIES IN ALL LIFE STAGES FROM EGG TO ADULT

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Other Dow products for more profit in your orchard are Color-Set® to improve color and set on apples, and App-L-Set® for thinning apples. Insecticides are Lead Arsenate, DDT-50%-Wettable, Parathion-15%-Wettable, and Systox* (a systemic insecticide). Fungicides are Ferradow® and "Mike" Sulfur®. Ask your Dow dealer for information, THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

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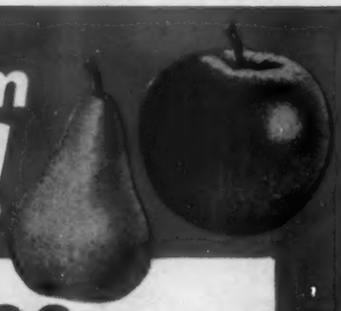

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- ★ Provides the first effective control of Fire Blight of apples and pears; also Walnut Blight, certain other diseases
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- ★ Helps prevent blossom drop

†Registered Trade-Mark of Chas. Pfizer & Co., Inc.

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- Lead Arsenate: Standard and Astringent
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- Dieldrin EM-1½ Emulsifiable Concentrate (1½ lbs. Dieldrin per gallon)

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- Lead Arsenate: Standard and Astringent
- Genithion P-15 Spray Powder (15% Parathion)
- 50% Malathion Emulsifiable Concentrate
- 25% Malathion Spray Powder

For Mites:

- 50% Ovex Spray Powder
- 15% Aramite Spray Powder
- Genithion P-15 Spray Powder
- 40% TEPP Liquid Concentrate
- 25% Malathion Spray Powder
- 50% Malathion Emulsifiable Concentrate

For Aphids:

- Genithion P-15 Spray Powder
- 40% Nicotine Sulfate
- 25% Malathion Spray Powder
- 50% Malathion Emulsifiable Concentrate
- 40% TEPP Liquid Concentrate

For Red-banded Leaf Roller:

- 25% TDE Emulsifiable Concentrate
- 50% TDE Spray Powder
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